ADVENTURES OF FUTURE SCIENCE

April

WONDER Stories

HUGO GERNSBACK
Editor

A GERNSBACK PUBLICATION

"50th CENTURY REVOLT"
by Arthur G. Stangland

Other Science Stories
in This Issue

"THE REIGN OF THE STAR-DEATH"
By A. Rowley Hilliard

"THE ELECTRONIC SIEGE"
By John W. Campbell, Jr.

"THE LAST WOMAN"
By Thomas S. Gardner

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ON THE COVER

this month from Arthur G. Stangland's "50th Century Revolt" we see the two Terrestrials destroying the solar power plant of their Venusian masters. The Terrestrials wear the appalaron equipment which propels them through the air in any direction.

NEXT MONTH

"BROOD OF HELIOS"
by John Bertin

is the long-awaited story, beginning in the May issue. Although a newcomer to science fiction, Mr. Bertin starts off by a story that we predict will be a smashing hit. Here are all the elements of fascinating science, intriguing mystery, exploration and adventure blended into an astonishing story of the future. Encased in their electronic casing our explorers awaken to find themselves apparently in a strange world. Is it a new planet or a new age; who are the mysterious assailants that face them everywhere; what are these strange growths, so unlike the plants of the earth they knew? What is the terrific cataclysm that must have disrupted time or space or both to plunge a half dozen people into the most amazing of adventures!

"THE VENUS ADVENTURE"
by John Beynon Harris

Mr. Harris, whose "Worlds to Barter" provoked such a storm of controversy, gives us now what he calls "realism in interplanetary travel." This is no ordinary interplanetary story. This is a human and gripping adventure of explorations into a new world with a surprising series of developments; of the rise of one race and the degeneration of another. The effect of the same environment on two groups of people is portrayed in a powerful way; and the menace that must be faced by explorers to a new world were never so clearly pictured.

Mr. Harris shows two of the elements that are fighting for survival today and what the possible outcome of that battle might be in the not too distant future.

FOR OTHER STORIES FOR NEXT MONTH
PLEASE TURN TO PAGE 1288

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THE WONDERS OF LIGHT-TIME

By HUGO GERNSBACK

WHEN we contemplate any source of light on earth, as in our everyday existence, we are not concerned with the time element. Light travels at the rate of 186,000 miles per second, and there is, of course, no terrestrial distance great enough to seriously bring up the time question.

When we look at a large clock a mile away, by means of opera glasses, and the clock says 12 noon, to all purposes it is 12 noon where we are stationed. With light, however, coming to us from the planets and the distant stars, it is an entirely different matter. We must now borrow the word "relative time" from Einstein and coin a new definition—*light-time*.

Suppose it were possible to build a tremendous clock on the planet Mars that could be seen by a telescope on Earth. At its nearest opposition to the earth, some 35 million miles away, it takes light some three minutes to bridge the gap between Earth and Mars. Now let us look at Mars, and suppose by some means, the clock which we have in front of us is synchronized exactly with the clock on Mars.

We look through our telescope at exactly 12 o'clock noon earth time. What does the clock on Mars read at the instant we look at the Martian clock? The answer is three minutes of 12. It must be so, because it takes three minutes for light to come from Mars to Earth, and the instant that the clock on Mars indicates 11:57, the light rays start to speed toward Earth, and while it may be 12 o'clock on Mars while it is 12 o'clock on Earth, yet, our eyes give us another figure due to the time that it takes light to bridge 35 million miles.

To get a better mental picture of what actually happens, let us forget the term light for the moment, and substitute a water stream instead of the light. The analogy is close, because light is today thought of as composed of minute particles termed *quanta*. Water too, is composed of particles, as we all know. Suppose now, that someone shoots a water stream from Mars to Earth, and that the stream moves at the speed of light, i. e., 186,000 miles a second. What happens? We again look through our telescope at 12 o'clock Earth time. At exactly 12 o'clock, Martian time (Earth's and Mars' clocks have been synchronized) the Martian observer turns on his faucet and starts shooting the water at us. Naturally the water will not reach our telescope immediately; it will take a little over three minutes for it to bridge the gap. Our Earth clock, therefore, will show three minutes after 12 by the time the water stream from Mars strikes our telescope on Earth. If the Martian observer keeps the faucet turned on, the water will naturally come in a constant stream the same as light rays, but if at, say 1 p. m. Earth time, the Martian turns off the water stream, the stream will still continue to flow for three minutes, and then abruptly cease.

So far, we have only considered what happens with comparatively near-by worlds, because the distance between Mars and Earth is infinitesimally small compared to interstellar distances. The light coming to us, for instance, from the nearest star, Alpha Centauri, takes four years to reach us. In other words, if you look at Alpha Centauri tonight, *you actually see light which had left that star in 1928*. For all we know, Alpha Centauri might have exploded or have been extinguished for three years without us being any wiser. We could never know it until four years after the event. But when we come to such distant bodies as island universes, so-called nebula, many of which are upward of 100 million light years distant from us, the case is still further accentuated. We see *now*, events that transpired a hundred million years ago, but other far more important considerations come up which tend to bewilder us.

Einstein showed that not all light from distant stars comes to us in a straight course. Due to the gravitational attraction of such huge bodies, a great deal of light is deflected when it passes near other stars. It is as if we had our former water stream, and during the journey, a strong wind were blowing against part of the stream, thus deflecting it; or if you wish, that instead of the stream being water, it were constituted of finely-divided iron, and while passing near some body which was highly magnetic, the stream were attracted and thus thrown off its course. If this happened, naturally the stream would be deflected and might never reach the Earth at all.

The case with light coming to us from such huge distances as 100 million light years, is similar. During its course, the light passes untold thousands of other stars, and is thus continually deflected; but that is by no means the worst part. During the 100 million years the original nebula has not stood still. It has rushed on in space, and for all we know—and it is pretty certain, this nebula is now many million light years away from the spot it was originally, where we now *seem* to see it.

So it will be seen that it becomes necessary to consider the time element when we come to talk of the light that comes to us from distant parts of the universe.

50th CENTURY REVOLT

By **Arthur G. Stangland**

(*Illustration by Paul*)

The ground quivered momentarily; andthen a blinding searing flash went streaming into space. Spear and Rotenstedt were tossed upward like small balloons.

50th CENTURY REVOLT

By the Author of "The 35th Millennium," "The Eye of Two Worlds," etc.

STRANGE, wraith-like shadows toiled up the narrow little gorge that lay squeezed in between two drear, lonely buttes. Snow—piles of it—smothered the floor, while a full moon hanging between the dismal naked peaks, bathed the stark profusion of thick-ribbed ice and black rock with a melancholy, cold white radiance.

There were two of them, and they moved with a sturdy, ploddy gait through the deep snow, disappearing at intervals in ebony shadows only to appear again farther up the canyon in another silvered patch of ice and snow. As they wormed their way upward toward the head of the big crack that disappeared into the pass between the pinnacles, they came to a bare overhanging ledge of rock that jutted out boldly as if attempting to bar their further progress. The first one, plowing heavily through the fine, powdery stuff, glanced into the inky blackness under the ledge where a lone spear of moon beams dared intrude. He hesitated, took another uncertain step and then halted, as if suddenly frozen there.

"By the sun, Ransel, look at that!" he cried out in horror to the one behind.

The white-furred Ransel stooped to stare in under the low ledge, and then stopped as if beholding a shimmering host of evil spirits. Like stone statues they stood there in the snow. But only for a moment. In a wild scramble they were rushing forward, fine dust billowing behind them like white clouds, toward a thick cake of ice that lay under the protecting lee of the ledge. Crouching down on knees and resting tired bodies on its surface, they gazed down through the glassy fragment in speechless awe, their thick breaths wheezing out in clouds of steam that drifted slowly into the silver of moon beams.

ARTHUR G. STANGLAND

WE who live on earth at present, enjoying a mild and healthful climate do not often think of the races of men who passed through many climatic cataclysms on earth.

The successive glacial ages that swept over the earth decimated our forbears who did not possess the strength, or foresight, or cunning to work their way to a warmer climate. It is only because men did escape from the waves of ice that descended from the poles, that we live today.

Such cataclysms must be expected again—and possibly of a different nature than any we have seen. And just as the civilizations of Atlantis, of Easter Island, of the Aztecs vanished, so ours may vanish if we are unable to cope with the strenuous times that may come.

Mr. Stangland pictures vividly such a crisis on human life, and in this fast moving story he shows how men, who are men, would meet it.

It lay in a stolid, deathless silence, as if reluctant to give up its awful secret after the frigid centuries had trooped by, helpless to tear the thing from its brittle bosom. For there was no mistaking what their bulging eyes saw in the middle of that cold crystal—*a man*. A medium sized man lying as if in a deep sleep, clothed in faded khaki breeches and torn shirt. The arms sprawled outward, as if warding off an unseen blow. His finely drawn, sensitive face, wax-like in the wan light of the moon beam, was contracted in a frown of pain, but that did not hide the keen intelligence behind the staring blue eyes, and heavy eyebrows. A shock of fair hair tumbled over a broad, high forehead.

It was several moments before they broke the cold silence that clutched at them unmercifully everywhere like an unseen monster insidiously striving to suck up the last bit of heat in their bodies.

"Rotenstedt," the one called Ransel exclaimed, "how long do you suppose he's been frozen in there?"

"A long time, Ransel. Look at his clothes. I've never seen anything like them!"

Ransel continued staring down into the blue eyes, a cogitative, wondering expression on his face. He got down closer—still staring, still intent. Suddenly his head bobbed up, startling Rotenstedt with the fierceness of his countenance.

"*He isn't dead!*"

Rotenstedt blinked slowly, and lowered his eyes to stare at the death-like face between them. Not dead!

"But—but, Ransel, he doesn't look very alive to me!" he protested soberly in an awed whisper.

"That's because you're not a physiologist. Look into his eyes! There's slumbering life there, man—*suspended animation!*"

"God, and—he's alive in there!" Rotenstedt muttered slowly.

"Come—let's get back to Arrhenius!"

* * *

There was a hushed silence in the room as three men stood about the limp, pale form that lay on the table.

"Think he'll come out of it all right, Arrhenius?" one of the men asked quietly, looking across at a white-bearded old man whose youthful gray eyes gleamed with an intense light.

"Yes, I think so, Rotenstedt," the older man returned, "his circulation has been normal now for the last two hours since we took him out of the refrigeration case of K-residue gas—there, his lips are moving!"

The sleeper stirred presently, and then opened his eyes with a twitch.

"What time is it?" he inquired, surveying the three with a glazed stare.

"Well, for the—!"

Arrhenius silenced the irrepressible Rotenstedt effectually with a mere glance, and then casually took out his watch: "It's 2 p.m."

"Great Guns!" the nude man exclaimed in a well modulated voice, "I've got ten minutes to make the All-America Airways station." And he rose on one elbow, attempting to hitch himself into a sitting position. Before the others had put out restraining hands however, he sank back on the table in a swoon.

"The experiment is a success," the white-bearded Arrhenius declared with a deep sigh of satisfaction, "the time of day was the last thought on his mind before he was encased in that cake of ice. His recollection of it shows that he is quite rational. Bring him down into my rooms where he can sleep."

BUT it was almost twenty-four hours later when the revived man, brought back from suspended animation, pale and worn, came out of his drugged sleep. For a moment his blue eyes roved wonderingly about the room, vaguely taking note of details—heavy chairs; the big desk in the center of the room; the long window that stretched across its width; the dark night sky faintly silvered by the moon—finally settling on the kindly, smiling old man who sat beside his bed looking down at him, calmly expectant. A puzzled frown disturbed the fair skin of his broad forehead.

"Who are you?" he asked at last.

"I am Arrhenius. Now, who are you?" the other countered softly, quietly.

"Why—er—Spear Mohler," the stranger answered, shaking his head a little, and blinking his eyes. Everything about him seemed to have a habit of blurring. Funny thing, but he'd never seen this place before. And these strange clothes on him. Why—! "Say—where am I, anyhow?"

"First of all will you tell me all about yourself, the number of the year you last remember, and what happened to you? Then I will answer your question."

For a moment Spear was silent, as if gathering his mental faculties together for an explanation. A moment of intense concentration—and then: "I'll tell you all I remember."

He was an electrical engineer for a power company in California, making a survey of the snow fields about Mt. Shasta. There came the final day to take an airliner for the east to make a personal report at company headquarters. Slipping and sliding down icy slopes, late for the airport, careless in choosing a safe footing, a moment of thrilling horror on the brink—pitching into space, a mad scramble for icy ledges shooting skyward—and then quite suddenly—oblivion. That was all of 2008 A.D.

"2008!" Arrhenius muttered in his beard, as if it were too much to comprehend all at once. Then he leaned forward in his chair as if the better to relate the story of his accidental discovery in the ice by Rotenstedt and Ransel, and the almost despairing superhuman effort to revive him later. As Spear listened, stark tragedy filled his soul. A melancholy loneliness haunted his blue eyes as if the pathos and suffering of a whole world had been crammed into his mortal body to torture him with inexpressible grief.

5021 A.D.!

Time had cast him up on a strange shore like a departing wave to leave him forever parted from all he had ever known. All his friends, his relatives, his associates—vanished in the vast, tidal sweep of Time!

" . . . and as legend has it," Arrhenius was saying, "Mankind suddenly woke up to the awful realization that the gigantic star, though passing by millions of miles away, was going to cause great tidal stresses in the sun, and leave it a pulsating variable for thousands of years. There was only one way to escape a horrible death from burning heat—stop the diurnal motion of the planet, and live on the dark side—."

"You mean—that right now we are on the dark side of the Earth, and—that it doesn't revolve any more?" Spear broke in. Why, it was an awesome idea to contemplate! It wasn't natural by all human experience.

The older man rose from his seat, and went to the long window beckoning to the other.

"There is the full moon. As long as I can remember, it has been up there never varying its position. We've known nothing else but terrific cold and darkness for thousands of years, Mohler, and now that the time has come to carry out our destiny as our forefathers provided, we are helpless! We are slaves!"

Spear clutched the frame of the window for support as he stood weakly up to the window, staring out upon a white world that was whiter still in the ghostly glow of a full moon. Where was the green vegetation he had known? The great trees that had covered the hills and mountains? The streams that had gushed down tortuous canyons in white foam? He was on the side of a high hill.

"What do you mean—'helpless—slaves'?" he asked at last, turning away from the expansive vista of lifeless snow swept plain.

"Spear, we are no longer the dominant race on Earth!" the old man answered between compressed lips, as if finding it hard to swallow his pride in admitting such a fact. "A marauding band of Venusians, too lazy to stop their planet, landed on Earth soon after the sun began to flame, and through powerful machines and weapons they —they overwhelmed us, subdued the Earthman's fighting spirit!"

Arrhenius was silent for a moment, living over the history of the past. Then he went on to explain more fully, staring out upon the undulating plain. It was about the year 3000 A.D. he said, when scientists discovered that the sun was going to become a flaming variable. The greatest scientists of the age concentrated on the problem. Out of the mass of data gathered, it was predicted that the pulsations would last over 2000 years.

The only practicable solution suggested of the many considered for saving humanity would be to arrest the diurnal motion of the Earth, so that the races could establish themselves on the cold, dark side. As a result, on the equator in South America was built a gigantic bank of tubes hundreds of miles long with their great maws open to the east. For twenty or thirty miles into the backbone of the Andean mountains massive reinforced steel tubes were driven to withstand the terrific constant strain of the tubes as they sent forth a vast field of gravitation, retarding the motion of the planet. The huge gravity screens of the tubes fed on large vats of silicon dust which

broke down atomically, releasing a powerful negative field of gravity.

ONE HUNDRED long years it had taken to slow down the Earth before the sun began to pulsate. But those far-seeing scientists did not only figure out how to stop the planet but they also left for posterity the power to start it again. They had computed the new equator of the planet when the pulsations would cease, an imaginary line that crossed the southeast part of the United States. With an undying faith in humanity and its inevitable progress, they constructed a similar bank of tubes pointing westward in the state of Texas. But the marvelous civilization of 3000 A.D. was almost annihilated after that anxious century. Their decadent soft living had unfitted them for the rigors of the terrifically low temperatures that existed on the dark side of the Earth. Finally, down through the thousands of years only a few of the hardiest northern races survived.

"But how are you enslaved to the Venusians?" Spear asked.

"In this particular unit we aren't—"

"—and in fact they don't know about this place!" Rotenstedt exclaimed, coming into the room unexpectedly to finish Arrhenius' sentence. Ransel was following him.

"Oh, Roty—and you, Ransel!" the old man greeted them. For a moment there was a silence, as the two men faced the pale, weak looking Spear with a mixture of compassion, wonder and not a little awe. Arrhenius introduced his two assistants. "Spear, this is Rotenstedt, one of my best technical men here in electronicity. And here is Ransel, a promising student of physiology and surgery."

Spear, tired and listless as he felt, was greatly cheered by the warm spontaneous smiles that greeted him. He liked the crinkly lines about Rotenstedt's eyes when he grinned widely. His unconscious, admiring glance took in every detail of the massive raw-boned physique of the big Norwegian, from the smooth pink skin of his adventurous, high cheekboned face to the powerful, thick muscled legs that were vaguely outlined through the translucent thermophane* cloth of his close-fitting breeches. Ransel, a tall, lanky Swede, had much of the picturesqueness of the Norwegian, Spear saw. A modern young Viking possessed of the hardy spirit of his forefathers, who smiled cordially, and then relaxed into a thoughtful mood, studying the revived American through shrewd piercing blue eyes.

"What do you mean—the invaders don't know about this place?" Spear asked of the three, resuming the trend of conversation.

"Roty means that all the technical men of the Earth colony near the Venusian city have banded together under Arrhenius here to develop weapons secretly in this hidden spot to attack the Venusians," Ransel explained. "We are about a thousand miles from the border of perpetual sunrise where the Earth unit of Sunrise is. You see, we chose this place because the temperature—100 below zero—is too cold for exploring Venusians. They would never venture this far. Only in these double-lined, vacuum-wall buildings is it possible to live out here."

"Is the sun still pulsating?" Spear asked.

"No."

"Then it must be normal again according to the predictions of those scientists," Mohler declared. "When will the tubes be set off?"

The faces of all three men clouded.

"That's the main reason for our being here, Spear!" Arrhenius cried with a note of suppressed anger in his voice. "For some unaccountable reason the Venusians refuse to set off the tubes. Sometimes I think their idea is to move out into the sunlight where they will have perpetual heat. But everyone in my unit here is as one in our mutual determination to wrest what is ours by natural heritage from these damnable Venusians. The time is near and it will be a bloody conflict!"

The warming tonic of sincere friendship did a lot for Spear, for while he was well nigh exhausted physically his mental attitude of discordant grieving held him back at first. From the moment they had found him in the ice, Rotenstedt had taken a great liking to Spear, and assumed the office of helping him to adjust himself to the new world; cheer him in his moments of melancholy moods when he inevitably pined for 21st century America; and acquainted him with some of the products of their workshops and experimental laboratories.

"This is the 'apparalon'—something you might call a 'flying suit,'" Rotenstedt explained about a week later, as they browsed through a workshop. To Spear and his 21st century ideas it reminded him much of a big suit of armor he had once seen in a wealthy mansion, except that a strong quartz-glass bulb fitted over the head, giving visibility in all directions. Out along each shoulder ran a thin polished rod that ended in a silver ball. From the latter streamed an intense beam of blue-white radiance with the force of a powerful jet, propelling a standing man skyward at will. But stranger still, at the touch of a lever, he could revolve the beams ninety degrees to a horizontal position and flash headlong through the air at a terrific rate. "You see that little box on the chest of the suit? It creates the power beam, Spear, from electronicity, a combination of electric and atomic force."

"Who discovered this force you call electronicity?"

"Arrhenius. He was in—well, here he is now!"

A new light seemed to radiate from the old scientist's blue eyes, and there was a curt briskness in his entrance that commanded the instant attention of both men. An undercurrent of impending action filled the atmosphere.

"Rotenstedt, I want you to take an apparalon right away and go to Sunrise. Tell Benson we'll be ready for the attack in another four days and to make his plans accordingly. Hurry back because I need you."

CHAPTER II

Into the Sunlight

ABRUPTLY he turned on his heel and started for the door, the matter disposed of and his mind on something else.

Excitement and adventure! Spear left out? Not by a long shot!

"I'm going with him," Mohler stated matter-of-factly.

An explosion at his heels might have aroused Arrhenius as much.

"You're staying here with me!" The words fairly leapt bristling at the young engineer.

"But I want to go, and go badly, Arrhenius! You've

*Thermophane—a heat-resisting cloth invented by Dubois in 3085 A. D.

had me caged up here long enough. I'm getting mentally sick. I want to get out," he persisted. A flat refusal like that always did strange things to the reactionary mechanism in Spear. You couldn't call it stubbornness, but a determined stand has to be reckoned with sooner or later.

A bright glint in the American's eyes and a set mouth brought the scientist back into the room.

"Spear, this is no pleasure jaunt to be indulged as a possible adventure trip," he stated evenly, biting the words off with a crisp inflection. Why, the damned fool couldn't operate an apparalon in the first place Headstrong fighting youngster—the kind that wouldn't know when he was licked—that's what he was!

But the headstrong fighting youngster would be heard!

"Listen to me: I lived in an age long before your great grandfather twenty generations removed ever saw the light of day. It was the beginning of the Golden Age of Science you talk about. Right now you are preparing to fight to the death an extra-terrestrial race to regain what legend says belongs to you. What must it seem to me to awaken to this era of Venusian sovereignty on Earth, I ask you? I have terrestrial pride—you bet I have! Now you just *try* to stop me from having a hand in the struggle. You're fighting because of a legendary principle handed down generation after generation, and I'm fighting for vivid memories of my world, my home—the Earth that was ripe and luscious and green. Now, damn you—stop me!"

In a burst of pent up emotion it all spilled out upon the astounded Arrhenius who stood in the middle of the room taking the tirade head-on and actually liking it. He began to grin. By the gods, raw gold sprouts out in the most unexpected places! Stop him?—and let all that energy go to waste in helpless anger!

"But you can't operate an apparalon, Spear," he protested in a weakening defense of his attitude.

"Yes, I can. Rotenstedt let me try one just awhile ago—didn't you?" And Rotenstedt nodded, grinning at Spear's tenacious determination. Sensing his growing advantage in the argument, Spear continued. "We can be a help to each other. What if something happens to his flying mechanism? He's alone—a thousand miles out there from nowhere and frozen stiff as a rod in five minutes. Now am I going!"

For a moment the dogmatic scientist considered. It seemed there was no stemming this youthful enthusiasm. Better to let him go than have him roaming around here like a caged lion.

"Well, I guess there's something in what you say at that," he said at last as if capitulating to Spear's last argument. "You'll have to be the one to accompany Rotenstedt, I guess, because I need all my other men."

Thus it was settled and immediately Spear followed the other two into another spacious compartment, passing out of the underground chamber in the mountainside into a sturdy thick walled metal structure that clung to the outside like a part of the living rock. Here the service apparalons were stored. Arrhenius stood giving them last minute instructions while they dressed carefully for the long flight to Sunrise. First, they donned a fur suit to be used at Sunrise, and over this they slipped a one-piece coverall of thermophane that would keep in the heat of their bodies. Last of all they climbed into the apparalons, a process that reminded Spear of a hermit crab moving into a new home.

"Now, Rotenstedt, watch Spear and take care of him. I almost feel as if his life belongs to me now," Arrhenius was saying. "Everything depends on secrecy for our success. We've got to surprise them in the attack. If they get the slightest inkling of anything wrong, the odds will be against us!"

"But what about these suits?" Spear asked, "Won't they suspect something wrong when they see us in these?"

"Rotenstedt will show you where to hide them before you get to the colony," the old man explained. "Now you, Spear, be extremely careful and follow Rotenstedt. I can't communicate with you by radio, because we must observe the utmost care against discovery."

In their awkward, heavy apparalons the two men clumped noisily to a door that led outward to a small platform overlooking the moonlit white plain. The old scientist followed them, helping them on with their helmets of glass.

"Good luck!" he cried, as they waved thick, metallic arms in silent farewell, and stepped through the cylindrical door in a cloud of sparkling rime crystals that rushed inward from the cold night.

Spear heard a faint sound of metal fighting metal, as the door revolved shut behind them. Outside. For a moment he dwelt on the warmth behind him in that solid building protecting the lives of many men. It would be nice to go back there. But no! The first step was taken—he couldn't turn back. Mohler took several lumbering paces after the Norwegian. Awkward business it was, and fraught with peril if one slipped in the hoar frost six inches deep. Might crack the armor.

Cold! It fought to get at him at every lapping metal plate and joint—it pried with might and main to open a cleavage at some weak spot to suck greedily at the moist heat, the very life that was Spear Mohler. Odd how the contracting metal plates of the sheathing sounded inside here—like a giant mailed fist squeezing it in a mighty grip.

TO the right and left stretched the range of snow-clad mountains, thrusting its corrugated backbone out of the sea of level, virgin white table-land that went rolling out to the horizon as far as the eye could see and the wan, hazy light of the moon would permit. Overhead, he could see through the quartz-glass a myriad stars dancing in the terrific cold of perpetual night, and gleaming with a frigid fire of sparkling diamonds. God, it was still! As if the doomed planet was lying in a coma, freezing solid to the very core. The mere thought of it penetrated to the marrow with an icy keenness!

"Ready, Spear?"

The engineer started as if viciously stung. Rotenstedt speaking through the little radio system each apparalon carried.

"Oh, yes, I'm all right." Funny thing how loud and crystal clear voices sounded.

"Turn up your electronic generator half," the young Norseman instructed, "and as soon as I rise, press the black button and follow me."

Spear, standing like an eaglet poised on the edge of his crag nest, followed directions and threw the little projecting tumbler switch in the box. Immediately there was a singing hum in his ears from the powerful little generator. And when the other rose into the air like a black

ghost against the sky, he pressed the black button. From the little bulbs at his shoulders burst a brilliant blue-white beam, and he felt himself rise into the air as if gently plucked off the platform by an elastic silken cord. By the time they had risen a thousand feet slowly into the frigid night, Rotenstedt spoke again.

"Pull up the horizontal lever now, Spear, and flatten out. Give your generator all she's got this time; we're going to go so fast that the friction of the air will keep you warm."

The engineer soon discovered the Norwegian was far from being wrong. Wind! It fairly screamed at the ends of the rods. And it got warm. Too warm. With difficulty he opened several vents in the side of the apparalon.

For several hours the two men flashed through the silvery night like two black phantoms side by side, leaving four bluish radiant trails.

"Spear, do you see that needle pinnacle to the left there?" Mohler heard Rotenstedt ask.

"Yes," he spoke into the transmitter after twisting his head and peering intently into the distance.

"Keep that well in mind, because it will serve as a landmark on the way back. That's almost halfway."

It was sometime later that Spear noticed a distinct rosy coloring on the eastern horizon which they were approaching at a tremendous rate. They had crossed a rocky range of mountains so rugged that the snow found little lodging surface, and left them in sombre nakedness. Then out across a wide valley they hurtled, coming quickly to another range of mountains that bordered the white plain.

"Take it easy now, and cut her half." Rotenstedt advised Spear. The latter followed the deft Norwegian, as he swept with diminishing speed through a snow-choked pass, and began to descend. "Now come into the vertical and follow me."

As he righted his position to normal and began to sink feet first, Spear got a glimpse of another valley beyond the ridge that rose starkly before him silhouetted against a glowing orange sky. Just below the horizon somewhere was the sun, and behind him low in the sky was the moon. Way over to the left, and outlined vaguely in the shadow of the mountains, crouched a massive, phantom line of black holes stretching out into the unknown northern horizon. The tubes, Spear guessed without even questioning Rotenstedt.

By now they were coming down into a small canyon, walled in by surrounding ridges of the mountain range. The young Norseman was the first to land on his feet, choosing a bare ledge of rock that was swept clean of drifting snow by an icy wind that whistled forlornly down through the gorge. Spear settled down beside him contacting the rock almost as adroitly as the more experienced Rotenstedt.

"Good work, my friend!" the young Viking giant exclaimed in praise. Then after a cursory glance up and down the canyon that was steeped in vague gloom, he began to extricate himself from his suit, indicating that Spear should follow him. "There's a little cave around this rock where we'll cache these." And carrying his apparalon carefully, he rounded the jutting boulder. Spear, coming close behind him, discerned a patch of blackness in the wall of the gorge that was so indistinct as to be merely a darker spot in the deep gloom. A light flashed in front of him, startling him with its unexpectedness. Rotenstedt's.

"In there," the Norwegian said laconically, pointing with his electric torch. It was a small grotto that cut back into the rock for some twenty feet. They had also taken off their thermophane jumpers, for the sight of them would arouse suspicions in the minds of the Venusians. Nowhere else was thermophane cloth known. The fur suits underneath would have to do them from now on—just as the Earthmen of Sunrise dressed. Nevertheless, taking off such a lot of warm clothing left Spear shivering in the near zero atmosphere of the gorge.

"Cold, eh?" Rotenstedt observed, as they retreated around the friendly bulwark of the great rock which offered some slight protection from the cutting wind in its lee. "Well, we'll soon get warmer when we get out into the valley and wade through a sea of snow. Let's jog along now, and warm up—but not too fast, Mohler, you'll freeze your lungs!"

AFTER a short distance of following the ledge they came to the mouth of the gorge, and as they skirted the fan-shaped slope of the right side and started down the windy hill, the glory of a perpetual sunrise burst upon them. It filled the horizon and halfway up to the zenith with a tenuous orange-gold haze, pierced by a perfect fan of sunbeams. It might have been the return of the sun in springtime up in the Arctic regions. And yet unbelievably, this was somewhere in the southeast of old America, Spear kept thinking over and over as he continued walking. His breath came out in clouds of steam that were taken away immediately by a strong wind flowing around and against their backs like a river.

Down into the valley they mushed, avoiding rounded hillocks that looked much like masses of sugar or salt. Several miles they had to plow through drifted snow across the valley, but the sheer difficulty of the way forcing them to exert their strength kept them warm, though as Spear said, he could notice the atmosphere getting warmer.

"Roty, what's happened to the tubes?" Mohler asked after looking in vain for sight of the big yawning mouths. "I saw them when I was landing, but I haven't been able to see them since."

"They're about ten miles away up there behind a ridge that sticks out into the valley. That's why you can't see them now."

"Ever been near them?"

"No. You see, we aren't allowed up there—the Venusians have a lot of soldiers guarding them," the Norwegian returned. "One poor fellow got near there once and came back with a description of what he saw. But afterward they somehow searched him out, and killed him. He said the whole thing was so compact that there was no way of getting inside to the mechanism. But what interested me most of all was that he reported a sunken space in the stone-concrete base of the south end where a huge plaque had been torn out. We've often wondered what could have been there and where it is now."

The two men were nearing the eastern edge of the white valley and the foothills of the mountain range bounding it. Spear's eyes were keenly aware of everything about him, and it was he who first saw the Earth colony of Sunrise. It lay like a bleak thing in the dark shadow of the mountains on the sides of a small valley opening out

into the larger valley at right angles. At the head of it, Spear could see the cold, white outlines of a mountain that rose steeply, its crest bathed in a warm, reddish crown of sunrays.

"Is that the place, Rotenstedt?" he asked, pointing in the direction of the colony.

"Yes, that's Sunrise," the Norwegian assented, "and a fine place to be buried in with such a name. But that's where the Venusians have put us."

As they neared the entrance to the narrow valley, Spear noticed for the first time that the snow was not as deep, and that here and there appeared little clumps of a hardy bush. Occasionally, they avoided large rocks upon which was growing a green moss. Life was able to gain a precarious foothold here on the border at least. The first of the steel houses appeared in view as they rounded a rubbled slope. Peculiar structures with no angles to them, every edge rounded off to repulse the elements. Nearly all were clustered in the bottom of the canyon, though some ventured up the sides, braving the inhospitable, and insecure footing of the stark, black rock. It came to Spear that this might have been a setting for a mining village in the wilds of northern Canada. But the illusion was quickly dispelled when they worked their way into the midst of the colony.

"Good Lord! Roty," he exclaimed aside to the other, "what's wrong with these people? They seem like a colony of the living dead! Everyone moves like he's chained to a thousand pounds, and has lost the last thing he owned. Look at the sombre faces of the men and women —they look downright wretched, if you asked me!"

"They've lost the last thing they owned, Spear. The damnable Venusians rule their very destinies," Rotenstedt exclaimed, his aggressive Nordic features drawing into grim lines of leashed hate. "For eighteen-hour stretches they slave for the cursed invaders in their city over the mountains there, and then are only allowed six hours to come back here, take care of their personal affairs and get some sleep. It's slow murder!

"But worst of all, my friend, the education of their children is discouraged. Can't teach them in our own schools unless under Venusian tutelage. You see their motive, don't you? They want to reduce the standards of the Earthman—take away his pride in his education, his traditions and stamp all that out. They've nearly succeeded as you can see!"

A sickening feeling of disgust and revulsion at this decline of humanity swept over Spear. Underlings! God, and man had descended to that! Ousted from his own home by a band of tyrants, told what he could do and not do, and then enslaved to them. Humph. And Arrhenius was going to keep him from the conflict to right all this! A colossal interplanetary outrage that would be avenged with swift death—merciless, pitiless carnage.

Coming toward them, Spear saw a group of three men, quite swarthy in appearance and endowed with raw-boned, bulky physiques. Instinctive dislike for their bulging, lustful eyes and cruel thin lips welled up within him. Must be Venusians, judging from their swaggering lumbering strides, he concluded. Taller than the Earthmen about them they seemed to gloat in their superior strength and evil hold on the dejected, worn-out pitiful beings that drew away from them.

CHAPTER III

Enslaved!

"WHO are those men?" he asked, looking to Rotenstedt.

"Be careful now, Spear, those are Venusians. Keep on walking and they won't bother us," Rotenstedt answered in guarded tones. There was a glitter in his eyes as he stared at them covertly. "See that one with the scar that begins at the corner of his right eye and goes back to his ear? That's Rolkar, and a hateful devil, too! Supposed to be a prince of some kind among them."

Just then a girl dressed in heavy furs came out of a rounded, low bright metal dwelling. Something in Spear did a queer flop as he caught sight of dark lashed eyes and a cameo cut face of ivory skin in the light from the door as she stepped into the snow outside. The scar-faced Venusian was the first one of the trio to speak, and immediately Spear hated his harsh, domineering voice.

"Well, look at the little snowdrop we've been missing all this time! Come here, and give our eyes a treat," the uncouth prince exclaimed loudly, putting out a hand to catch the furry sleeve of her coat, and Spear could see her shrink instantly at the sound of his voice even though she wasn't facing him.

"Oh, no, no—oh, please!—," she begged, fighting to push him away from her as he drew her to him.

"Behave yourself, and I'll get you out of slaving away your beautiful young life, my little white lily," Rolkar smiled unctuously, his cruel thin lips curling back to reveal a row of uneven tusks.

"Let me go!"

A quivering something in her mellow, resonant voice struck an answering chord in Spear. Without a word, he was striding across the hard packed snow to the struggling pair.

"Take it easy, Spear—they'll find out you're a stranger!" Rotenstedt warned him, catching up from behind.

But Spear was fast losing control over his rising anger. Damned bully that needed a lot of reefing! "Get those big hams of yours off that woman!" he snarled, bounding up to the laughing Rolkar. With a wrench he tore the big Venusian's arm away from the girl.

The force of the Earthman swung the Venusian around, facing the grim-faced Spear. In puzzled surprise he looked down at blazing hard blue eyes, and a compressed mouth that curled down tightly at the corners.

"Well, this is the first time I've ever seen any fight in your kind!" the amazed Rolkar mouthed slowly with a foreign inflection on his words looking at Spear in astonishment. But only for an unguarded moment. The lids of his large bulging eyes began to twitch, and his cruel mouth gathered into an evil sneer. "But it won't take long to knock that out of you!"

He came with a wild lunge at the Earthman, teeth bared like an ugly animal. But to his considerable surprise he was met by a dozen jabbing, knotted fists before he could reach his adversary. They battered and pounded against him unmercifully in sudden fury—and Rolkar was staggering back, dripping a peculiar orange blood from the corner of his mouth. He uttered something guttural in

his own language—whipped out a slender rod with a tiny lens in one end.

"I'll teach you to interfere with your superiors!" he railed in an insane rage, wielding the tube, and before Spear could move he winced at the contact of a pencil of rays that flickered steadily, stinging his flesh as if struck by a thousand red hot pellets from a high-powered air rifle at close range. All over his body the rays went, piercing him cruelly until he sank to the snow writhing in half crazed pain.

The girl stood by watching the terrible exhibition of wanton cruelty with horror in her eyes, held by one of the other Venusians. However Rolkar had not figured on the big Scandinavian who stood to one side in a horrified daze, as he watched the suffering Spear rolling in agony.

He boiled to life—exploded like an enraged Antæus. With a roar he kicked viciously at the weapon hand of Rolkar, sending the projector flying across the snow. The Venusian grabbed his wrist tightly, his face cracking into a thousand creases of exquisite pain. Rotenstedt fell to work quite oblivious to the others about him, ramming his huge knotty fists home with the inexorable regularity of a steam piston.

The Venusian, big as he was, could not meet the brutal punishment of the sledge-hammer blows, and gave way, half stunned by the suddenness of the attack. But another ray came into activity, stabbing through the air with a venomous hiss, and unerringly finding its mark on Rotenstedt's chest. It continued to hiss. The blonde giant wilted under the terrible beam and sank to the hard snow in helpless agony.

"Guess that'll take some of the insolence out of 'em, and teach 'em humility," said one of the Venusians to Rolkar as he pocketed his rod.

"Get their tag numbers," Rolkar growled at the guard.

Obediently, he stooped over the prostrate men and searched them in vain. Spear and Rotenstedt were too much in pain to care what happened to them.

"Why, they haven't got any!"

"Oh, they haven't, eh?" the prince exclaimed in a livid fury, his bulging eyes glittering with an almost fanatical light. "So, they've escaped conscription! Their lesson in humility is only begun. Take them to the city and see that they learn it—the girl with them too; she's held me off long enough!"

Painfully bruised all over, as if jabbed in a hundred different places with a red hot poker, the two Earthmen were taken to the Venusian plane along with the girl. The flight to the city was merely a hazy collection of aerial views of the mountainous country below for Spear and Rotenstedt.

THEY had crossed the highest point of the range, and were coming down into a vast flat plain. On the edge of it lay the sun like a great radiant orange, and nestling in its warm flood of rays at the foot of the mountains was a large city of buildings that glinted with the brilliancy of chromium metal. Little snow on this side.

The plane settled down on top of one of the buildings amidst a lot of other ships, coming and going.

"All right, follow us!" one of the guards ordered with a sneer.

The three terrestrials followed in a daze if not consciously obediently, entering a little cube-like structure at one end of the landing platform. It housed a small escalator, and took them below several stories. Still following their guards, they entered a room in which a dapper old Venusian sat cocked up before a desk. The guards saluted.

"Some more of them, eh?" he grunted.

"Yes, Mhor—bearing the displeasure of Rolkar."

"So?" old Mhor returned contemplatively, gazing up at the three. "What's your name?" he demanded of Spear suddenly, pointing a pencil at him.

"Spear Mohler," the Earthman returned, sullenly resentful.

"All right, Mohler, you shall work in the heliopower house," the Venusian returned crisply, after glancing in a thin black book. Then he looked questioningly at Rotenstedt, "And what's yours?"

"August Rotenstedt."

"You'll go with Mohler here." Then the old man turned to the young girl. "Now my pretty one, what's your name?" And the veiled lust in his eyes made Spear seethe inside.

"Edith Arrhenius," she returned, with her beautiful eyes flashing black hate.

"Well, now that's a nice sounding name!' old Mhor exclaimed, rubbing his dry, leathery hands together. "I rather fancy you will make a very attractive servant in our central club unit."

Edith Arrhenius! Spear started at the name. The old scientist's daughter? He'd never mentioned her. If only he could say something! He looked to Rotenstedt, but the Norwegian kept his eyes averted. Then in the next moment they were being taken away by the guards. Too late!

Against the hillside above everything else Spear saw a huge building whose front, facing the sun contained three banks of lenses, and in everyone of them he saw a reflection of the red sun, as if it were the multi-faceted eye of some monster. It was fully five hundred feet long, eighty feet high, and one hundred feet deep. Its rustless metal walls gleamed like a polished mirror.

Like two virtual prisoners, Rotenstedt and Mohler were thrust through a tiny door in one end. Inside they followed a corridor until they came to the end where a thick metal door barred their further progress. A guard opened the door and they were led into the presence of an irascible looking, iron-gray haired man. Spear felt an instant revulsion, as if a wave of hatred had advanced upon him from the man.

"Some more of Rolkar's 'special' cases, I surmise!" he almost hissed, as soon as he glanced at the two Earthmen.

"Yes, Axar. 'Humility' cases," one of the guards said laconically.

"Me!" the beak-nosed Axar exclaimed in a livid fury, "Me! Rolkar always picks me out for his 'humility' cases, and I have to break them in on delicate machinery, and then bear his biting sarcasm when they slow up production of power. I'm tired of this!" And he slammed his fist against the top of his desk. A fuming moment and he pressed a button at the side of his desk. "Well, I'll teach them humility in a hurry or break them!"

A younger Venusian flurried into the room.

"Take these terrestrials in to Antorg—tell him I want results!"

As if fearing the responsibility of having them on his hands, and wishing to get rid of them as soon as possible, the young Venusian hurried to execute his mission. Fol-

lowing their guide, the Earthmen entered an immense room—Lilliputians in a maze of gigantic machinery. They were handed over to a burly black-headed Venusian whose fat, greasy face repelled both Spear and Rotenstedt. His small pig eyes glittered with a sly look when the guide had delivered his message.

"Yes—we shall teach them humility!" he exclaimed, looking over the two Earthmen, and feeling their muscles, like a man buying a team of draft horses—a process they suffered with difficulty. Then he drew back, surveying them critically. "I don't know if you two have the intelligence to do this work I'm going to give you, but then all it needs is a 'strong back and a weak mind' as you Earthmen say!"

Spear had difficulty in controlling an impulse to choke those little pig eyes out of the man's face. It was only too obvious that he was baiting them, wanting them to explode in indignation, giving him a chance to bully them. Rotenstedt started to move, but Spear, standing close to him, touched him lightly with an elbow. The incensed Norwegian stopped. A crafty, knowing look came into Antorg's greasy face, sensing their reactions.

However, he turned off into a new trend, and with an esoteric air of superiority began to explain the operation of the solar power-house. The system used was photo-electric in nature. In the front wall were three banks of condenser lenses, each lens three feet in diameter. Ranged along the back wall were the photo-generators, each about eighteen inches in diameter, and consisting of a sheet of metal covered with another sheet of silver selenide. And coated over the latter was a transparent layer of another metal a few molecules thick. The light concentrated by the condensers, and passing through the sandwich of metals set up a strong current, which was connected into the main line for distribution to the Venusian city. The floor of the vast building was divided off into large battery rooms and switchboards. In another part were a number of huge converters, changing the direct current of the photo-generators into alternating.

"WHAT are we supposed to do?" Spear asked at last.

"I want you both to get busy on the job of changing all those photo-generators, because the transparent layers are worn out, and we're not getting enough power," Antorg explained to them. He called over several Earthmen working on the bottom tier of generators supported above the floor some ten feet. "Show these two how to change those generators, and you can start on the next tier,"—turning to the others—"and you two see that you learn how to do it right, or else—!"

Antorg left the sentence in mid-air, but its significance was not lost on Rotenstedt or Spear. The other workers took them to the bank of machines, and began the task of explaining the heavy work of changing over the generators. Spear paid close attention, but the dejected dull expressions of the men's faces were ever before him. The labor of moving the two hundred-pound circular disks and their thick metal frames had taken a terrible toll of their strength and left them like a pair of worn out automatons, Spear reflected,—their probable fate in the next eighteen hour stretch.

"And be careful of the focal beam or it will burn the flesh off of you," one of the men warned.

"How would you like to burn down Antorg and the rest of the Venusians!" Rotenstedt ventured quietly, making sure that Antorg was busy some distance away.

The two weary Earthmen looked up in startled awe, as if such a statement were a sacrilege unheard of. Underlings! They looked around before answering.

"What do you mean?"

"I mean that in four days Arrhenius and his men will have all the weapons ready to attack the City. Be ready to do your bit when the attack starts," Rotenstedt explained in an undertone, pretending to work over a machine. "Tell all the Earthmen here you can with safety, but be extremely careful."

"We'll be ready!"

Spear thrilled to the flash of spirit that flamed up to replace the dullness in their eyes, as they moved off to work on the next tier.

"Roty, I'm damned sorry about this mess I got you into!" Spear exclaimed as they set to work on a photo-generator. "Guess my temper rode me hard."

"Well, I think old Arrhenius would have done the same," Rotenstedt returned, "that was his daughter."

"His daughter, eh? What a beauty!" was Spear's rejoinder. "But what are we going to do now?"

"Work our fool heads off for the next eighteen hours, I guess," the Norwegian said glumly, jerking savagely at a stubborn terminal. "When we get off for our six hour rest, we'll get to our suits as soon as possible."

And for the next eighteen hours Spear tasted the bitterness of a worker's life in the Venusian city. Work for a young giant it was—unshackling ponderous disks, boosting massive, awkward frames aside, not to mention the abuse heaped upon them by Antorg at their natural clumsiness. Antorg was a dyed-in-the-wool slave driver, Spear swore to Rotenstedt, and what he wasn't going to do to that greasy, fat faced lug! No time for a bit of rest—a mere pause and Antorg flashed his pencil of stinging beams, prodding them on to work. The terrible reality of the disgrace of a dethroned race was being burned deeply in Spear's brain. Fate's mysterious and esoteric spawning of a Nemesis.

"Ha, ha, ha! I teach you humility!" Antorg guffawed each time he burned them with the beam. He might well have goaded a wild bull.

By God, what a big slice of revenge he was going to get in four days!

At the end of their long shift, the obese Antorg curtly dismissed them with the ominous command to be back in six hours. He took their tags, punched them and let them go.

"There's going to be one of the first casualties," Spear growled vengefully, as they hurried on, grateful to leave the slave house.

"Yes!" Rotenstedt grunted. "Now if we can only get away from Sunrise without discovery we will be lucky."

As they progressed down the hill into the city and began to encounter groups of workers off shift, Rotenstedt was approached by a blond-headed youth.

"You, Rotenstedt!" he exclaimed, and fell into step beside the young Norwegian. Guardedly, he looked around, and then slipped a piece of paper into Rotenstedt's hand. "For God's sake be careful with that paper, man. I'm going on duty now. I can't talk any more."

"Four days, Benson—be ready!"

And with that cryptic message they passed on. Spear

looked curiously at Rotenstedt, silently waiting for an explanation.

"That was Benson, our chief agent here," he explained. "I'd like to know what's in that note, but I can't risk the Venusians seeing it. Have to wait till we get back to Sunrise."

They boarded a plane going to Sunrise with a load of returning workers just off their stretch of drudgery. As they settled themselves they were pleasantly surprised to see Edith enter. A strained look was on her face. As soon as she saw Rotenstedt and Spear it changed to one of anxiety.

"I must see you when we land," she whispered mysteriously, as she passed them.

CHAPTER IV

A Moment for Strategy

BOTH men glanced at each other in puzzled wonderment. Spear sat in restless silence, for although he wanted to quiz the Norwegian, the presence of Venusian guards precluded the desire. The mystery was deepening, leaving him on the outside of things and it irked him. Not until they had crossed the mountain range and descended into the shadow of the valley was he able to speak his mind.

"What in the world is all this about?"

"Follow me, and we'll find out, Mohler."

Casually they sauntered away from the landing platform, and Spear noticed that Rotenstedt seemed to be waiting for Edith to pass them. Without a sign of recognition she went by, and continued on her way until she entered a two-story building toward the edge of the settlement. Making sure that no one was watching at the moment, they went into the same building.

"Oh, Rotenstedt, I'm so glad to see you!" Edith exclaimed, "I have some sinister news for you." Then she turned a concerned countenance on Spear. "And I'm so sorry that I was the cause of getting you both into trouble." She put out a small but very capable hand: "I'm Edith Arrhenius."

"And my name's Spear Mohler—but then you've already heard that," the American returned, taking her proffered hand. He felt somewhat abashed at her frank, admiring gaze, and was wondering what to say next when they were both startled by an exclamation from the Norwegian.

"Benson has found the metal plate torn out of the south end of the tubes!" he cried excitedly. "Here's what he's copied:

> 'TO YOU WHO LIVE WHEN THE SUN REACHES MEAN
> We of the 30th century have built this great bank of gravity tubes that you may again revolve our planet. By the simple act of striking the metal disk imbedded above this plate will you start it. One hundred years it will take to build up the rotation to a solar day of twenty-four hours. But beware the Moon! There lies grave danger. The tubes *must* be started before aphelion after the pulsations stop or the delicate balance of the Earth-Moon system will be upset by the increase of the radial area covered, and it is very probable that the Moon will crash into the Earth.
>
> . . . . . .
>
> We have done our part in preserving the continuance of the human race. YOU must carry on to greater heights!'"

"Aphelion!" Edith cried aloud, "that's two days away! That explains what I heard in the club unit, Rotenstedt. Remember old Mhor? He and another man were drunk in the library, and talked a long time, while I listened through a pantry door. After I served them some more liquor, I heard them talking about how different things were going to be when they returned to Venus, mentioning something about the new sun to light up their dark side."

"A new sun!" Rotenstedt spoke with fighting emphasis. "And I suppose they think we're going to sit by and let the Moon make a sun out of our planet, eh?" He rose from his chair with burning cheeks and a cold gleam in his steel-blue eyes.

"Oh, I wish I could go with you now!" the girl cried.

"I'm sorry, Edith," Rotenstedt answered, "you know what your father said."

"Yes, I've got to stay here and keep an eye open for him."

"Exactly. Your eyes are even sharper than Benson's—you've done a lot of good for us!" Rotenstedt turned and went to the outer door softly. Cautiously, he looked out. "Come, Spear, the road's clear now. We have work to do!"

QUICKLY they made their way out of the little valley under cover of semi-darkness, and set out across the rolling floor of the larger valley. It was heavy walking, but they breasted their way at last up into the small canyon, and got into their apparalons. Like two flaming rockets they rose into the air and flashed into the unknown darkness of the west.

Almost two hours later they were sitting with Arrhenius in his chambers.

"You are right, Rotenstedt," he was saying, fingering Benson's note, "we must rush the production of more guns so we can attack tomorrow. And as much as I need you both here to help in that work, you are more valuable as workers in the power plant. I've got to have you there to work behind the lines. When we attack—and we'll try to make it at noon sharp—shut off all the power to the city—demoralize them."

"But we'll need some guns for ourselves, Arrhenius," the young Norseman reminded him.

"I'll get them for you, but be very careful with them. You must know yourself, Roty, how powerful they are—the most powerful known." He drew out two innocent-looking objects that gleamed with a black lustre in the bright light. They were short, stubby little things with grooves in the barrel. He handed them to the men. "There are two hundred spheres in the reserve chambers of each."

Good Lord, it's heavy for such a tiny gun!" Spear exclaimed, looking at the gun in his palm with real surprise.

"That's the spheres," Rotenstedt explained, "the ammunition. They're about a millimeter in diameter and heavier than uranium, but they're unbelievably powerful."

"You had better go now," the scientist suggested, looking at his watch, "your six hour leave will be over when you get back to Sunrise."

Spear and Rotenstedt hurried into their mechanisms. Before they stepped out upon the platform in the intense cold of the everlasting night, Arrhenius gave them a final word.

"Remember, you are part of a plan," he said, putting

his hands on their shoulders, and looking deep into their eyes, "that has been worked out carefully. Do your part to the utmost. Why Fate has seen fit to cast you into our particular niche of time, Spear, I don't know. But there is a greater plan of which our small one is a tiny part; yet nevertheless, woven into the pattern as an integral part. And you may be called upon to play a stellar role in that greater plan! May the mighty forces of the universe favor us tomorrow. Goodbye!"

And the two black, bulky shadows rose into the crystal-clear night on ascending shafts of light, and suddenly shot over the eastern horizon in a burst of brilliant beams.

Quietly, deftly they landed in the bleak, windy canyon and cached their suits in the little grotto. Hurriedly, they waded through the snow in the valley, for they would be late. Unnoticed, they slipped into the little settlement, and were almost too late to catch the next plane leaving for the city. For Spear there was a new sense of power in the feel of the heavy little gun in his pocket. It gave him confidence in himself.

Back in the Venusian city the two terrestrials went back to work quite unenthusiastically, though with a sense of impending excitement for what the next day would bring.

It was three hours before noon of the next day that Antorg called them down from the second tier. Anxiously they had been watching the time, and keeping a wary eye open for trouble.

"Come on down from there, you lazy louts!" he bawled, "you're wanted outside."

Apprehensively, Spear glanced at the big Norwegian youth as he climbed down to the floor. A puzzled expression was on his fair face as he strode solidly along to the door. They were met by the beak-nosed Axar.

"Are these the ones?" he asked several guards who stood watching the entering Earthmen critically.

"Yes. We want them."

Wonderingly, Spear and Rotenstedt accompanied the close-mouthed Venusians who admonished them to make no false moves or "they'd be dead meat!" Spear sensed catastrophe in the grim expressions on their faces—it swirled about him like a premonitory, black suffocating cloak. He fought off the sensation.

They entered a bright, shiny building that rose with almost an air of hauteur above the rest. To Spear's gloomy, apprehensive state of mind everything had taken on a dull, evil look. The more insensitive Rotenstedt entered the portals of the edifice with a stolid expression, betraying no emotion. Instead of ascending into the shaft of the towering building, they were taken down into the subterranean levels through a small automatic elevator. Then through a short corridor, and they stood in the midst of a room full of complex apparatus, a spic and span, orderly laboratory. Spear's eyes travelled over the men who stood with eyes trained on them as they entered. He recognized Rolkar and Mhor; the other one he had never seen.

"Did you examine them?" Rolkar began.

"We didn't think it was necessary, Rolkar."

THE Venusian's black eyes blazed forth in sudden, wicked fury. "Didn't think it necessary! You blundering, brainless fools! Search them right now."

Chagrin spread over their faces as they discovered the blunt heavy guns in the Earthmen's pockets. Rolkar received them with a contemptuous, twisted smile on his cruel lips. He turned to face the two.

"Now, tell me where you got these," he asked, his glittering, evil eyes watching them intently.

Rotenstedt stared into Mohler's eyes for a long moment, and what the American read there filled him with a determination to die rather than open his lips. A great love of Earth filled him now like a glowing fire. Sealed lips!

"So? You won't tell, eh?" Rolkar sneered. "Well, we can tell you anyway. You got them from a man named Arrhenius!"

Spear and Rotenstedt paled at the startling words. All was lost! Somehow the accursed Venusians had discovered the secret just on the eve of the attack. Several hours more and the terrestrials would be coming only to meet the forewarned Venusians.

"You might as well confess what you know and save your own hides," Rolkar suggested. "Very shortly we are leaving for our planet. We'll need workers there to reëstablish our cities, and if you'll tell us a few things we'd like to know, you'll go with us."

"Why is it you don't know everything now—you seem to know so much?" Rotenstedt answered contemptuously.

"Because that impudent fool, Benson, killed himself before we could make him talk," old Mhor blurted.

"Shut up, you doddering old woman!" Rolkar turned on the dapper Mhor.

So! Poor Benson had been discovered and made to talk, but succeeded in cheating them.

"Now there's no use mincing words any more, Rotenstedt, and you, Mohler," Rolkar said rapidly with suppressed excitement, "you've got a place to manufacture these weapons, I know. I'm going to tell you something. Whether you know it or not, we are a superior race of people. We have ideas—superior ideas. Now, do you see that small cylinder with the cog wheel on one end?

"Once we set that going, the little metal contact point you see near the circumference will travel 350 degrees and touch that other fixed terminal. It will take one hour for that to happen, and then—poof! The dust in those tubes will start to disintegrate, and set fire to the atomic structure of the whole planet—an atomic fire that will last for hundreds of centuries when the Moon coalesces with it. But in one hour after we set that, we shall be well on our way to Venus. You see?"

Spear did see. His thoughts were racing with the speed of light. For centuries the Earthmen had been under the dominance of the Venusian race—enslaved to do their slightest bidding. And now they were bargaining to carry them away to another planet to be ground down like grovelling dogs.

"Well, are you going to talk?" Rolkar asked ominously, looking questioningly at the Norseman and the American who both stood mute. "Then I have another idea that may work." And he dropped into a chair before a transmitter, plugging in a microphone.

"This is Rolkar calling Arrhenius on a broadcast band. I am warning you, Arrhenius, that your men, Rotenstedt and Mohler, have sold me everything for a price about you and your little scheme you've been working. We are ready for you when you come!"

"But we haven't found out anything definite, Rolkar, about this person Arrhenius," Mhor protested, "and we haven't organized any force to meet him. Meet what?"

Rolkar switched off the transmitter, and rose with his cruel face drawn in livid rage.

"Stop your fool meddling, Mhor," he secreted in icy tones. "If you'd stop your playing around with women, maybe you'd have some brains in that empty head. Of course we haven't anything definite. But that little trick will draw the fangs of any plot they've been hatching. Use your head!"

Thoughts were churning around in Spears brain like a horrible, uncontrollable maelstrom. If Arrhenius got that message it would demoralize the whole terrestrial attack designed to surprise the City. A rising fury was seething within him. He, selling himself to the Venusians! A diabolical trick. Suddenly, his roving eyes stopped on the time-clock mechanism that would explode the tubes. Only eight feet away—maybe seven, and a metal wrench near it too. Perhaps it would work, maybe not —might as well make a supreme effort anyway. Rolkar and his superior ideas—strategy. He'd try some native terrestrial psychology. Guess Arrhenius was right about that greater plan—each part fitting so nicely into the other. Well, here goes!

In one great bound he left Rotenstedt's side and landed near the electric clock, seizing the wrench.

"Don't move or I'll short these terminals!" he exclaimed tensely, holding the tool to one contact and only several centimeters from the other.

For a moment there was a palpable, brittle silence in the underground chamber, every eye on the desperate Earthman. Rolkar began to laugh nervously—a forced laugh.

"But there doesn't happen to be any current at those terminals just now, my young fool!" he declared with empty bravado.

"Oh, there isn't, eh?" Spear answered grimly. He looked at the Venusian prince calculatingly. "Well, we'll find out then!"

And slowly he lowered the wrench, bringing it closer and closer to the other terminal. He mocked the bulging eyes of the Venusians who gazed at Rolkar with growing terror—stared in facinated horror. In Rolkar's glittering gaze he read that he knew there was current waiting to flash across the controls. Cold sweat stood on his satanic face. Each knew it was a test of the strongest wits.

"Oh stop it, stop it!"

Mhor broke out in a hysterical voice, no longer a dapper little figure, but a cringing, frightened weakling.

"Damn you!" Rolkar shrilled at him with venom.

"Roty, get their guns—and ours too."

The Norwegian, grim of face yet exultant, gathered up the weapons and handed Spear his blunt, stubby gun.

"Now, break up the radio transmitter tubes, and then we'll demolish this infernal machine."

But when they started on the cylinder, Mhor cried out:

"For God's sake, be careful with that thing!"

"I wish to high heaven you'd gone up with it!" Rolkar cried with biting sarcasm at the utterly demoralized Mhor.

CHAPTER V

The War in the Air

EVERYTHING demolished and safely out of the way, the two men hurried to the door, the only door in the room. Suddenly, Spear pointed his gun at the ceiling light and fired, at the same time closing the door and locking it.

"Now, we've got to get to our apparalons—we can travel faster in them, Roty!" Spear cried excitedly, his hands shaking a bit nervously now the crisis was over. "Can you fly these Venusian planes?"

"You bet I can! There's a landing stage on this building above. Let's take this elevator and shoot right up to the top. If anybody stops to ask questions—answer with this!" And Rotenstedt patted his little black automatic.

They were in the elevator and shooting skyward in a moment. At the top they stepped out cautiously, but all was quiet. No one was in evidence about the two planes standing ready for flight. Silently they entered a plane. As if quite at home, Rotenstedt settled himself at the controls and started the electric motors. Gracefully, they rose into the air and headed rapidly over the snow-clad range ahead. Without stopping at the colony, they kept on out across the valley and came down a short distance from the gorge where their apparalons were stored. One hour till noon.

"We've got to set off those tubes, Roty," Spear exclaimed, as he put on his suit, "the danger from that Moon increases hourly now!"

"All right, Mohler, if we do nothing else, we'll accomplish that!" the young Norseman cried.

From out of the frigid gorge they rose with guns in hand, and then suddenly shot headfirst into the north where in the distance lay the mammoth black holes of the tubes. As they flashed through the air at lightning speed, Rotenstedt's voice came to Spear.

"Guess they're not expecting anyone just now—no guards in sight," he said, "let's land—but be careful. We'll get this done in a hurry, once set off the Venusians won't be able to stop them!"

Quickly and easily they hovered with silken ease, and then descended with the suddenness of a falling stone. Spear marvelled at the gigantic proportions of the tubes where they projected from a solid block of stone-like concrete—like the muzzles of immense cannon. And hidden away, he knew, underneath was the great maze of tubular vats filled with floured dust waiting to release vast stores of energy. They were beside the giant wall that rose into the gloom of the valley for hundreds of feet. There was a startled shout from a hillock of snow.

"The guards!" Spear exclaimed. He turned to Rotenstedt. "Go ahead and hit the iron plate—I'll keep 'em off!"

Rotenstedt picked up a small rock and hastily dashed it against the plate. A ponderous, deep silence followed to be broken by the shouting of the guards running towards them. A blue beam of light pierced the gloom from the direction of the advancing Venusians.

"It doesn't seem to work!" the Norwegian sobbed out—another blow.

Came the peculiar hiss of Spear's stubby gun. The foremost guard flew into a trillion orange atoms. Still a vain wait for the tubes to betray some sign of action. Spear kept an anxious eye on Rotenstedt and the Venusians running down the slope toward them.

"Take a shot at it!" Mohler cried in desperation. He dodged another ray of light.

The Norwegian stepped back and lifted his gun, firing quickly. The little sphere struck the plate with the force of a hundred tons, shattering it completely.

"Let's go!" he cried frantically into his transmitter.

As they leapt into the air Spear heard through his quartz-glass bulb a vast sighing from the tubes down in the depths somewhere, like a giant antediluvian monster stirring from a long sleep. Stupidly the little figures on the ground stopped running, gaping at the two strange beings in the air, and seemingly listening to the tubes. The ground quivered momentarily, and then a blinding, searing flash went streaming into space from the huge maws. Spear and Rotenstedt were tossed into space like small balloons. It was the work of a split second however to assume the horizontal, and leave the vicinity on the wings of light.

Several moments later it was Spear who cried out excitedly, pointing at the moon.

"Look!"

Across the full face of the low swinging satellite moved a small swarm of tiny figures hurtling toward them where they hung in mid-air over the valley.

"Arrhenius!" Rotenstedt shouted.

In a moment the main swarm came abreast of them and they flew parallel with them. Ransel and Arrhenius were among the first. Several sleek, bullet-shaped monsters of the air followed them, leaving a luminous trail.

"Good work!" the old scientist exclaimed pointing at the gigantic tubes flaring forth, and lighting up the whole country round about.

"Just in time. First we're landing at Sunrise to add the rest of them to our force. Got plenty of apparalons and automatics to distribute."

THE little colony seemed to rise up to meet them when Arrhenius gave the order to descend. Grim-faced men clustered about them all anxious to get weapons and apparalons. The few Venusians who policed the colony were already captured and their planes commandeered. Great activity filled the hard-packed snow streets. People rushed in and out of the low metal buildings—shouted hilariously and pointed at the vast sheet of violet radiance that filled the sky in the direction of the tubes. Men tested their apparalons. Others instructed them in the operation of the flying suits.

"Silence!"

It was an imperative command. No one failed to recognice the voice. Arrhenius, white-headed, small of stature but an imposing figure withal, stood in the midst of all the confusion. When all was silent he addressed his men over one thousand strong from the top of a bare rock.

"The moment has come when we are making our last stand for humanity and all that the ages of terrestrial progress has left us. Rolkar and his clan have subdued us long enough. We are just as strong mentally as they are, but their evil methods of grinding our spirit down have all but relegated us to an inferior position. In our secret unit in the west we have demonstrated that we have mentalities equal to theirs in developing weapons of warfare. Do you know of any reason why we should be their slaves?"

"NO!" came the united chorus from a thousand throats.

Arrhenius continued to work his men up to a high pitch until they were ready to fight to the last drop of energy left in them. And when the command was snapped out, they all rose as one into the air and swept over the snow-clad range like a swarm of angry wasps.

Unprepared for such a visitation of grim, desperate beings from the skies, the Venusians were literally caught with their backs against their own walls. The surprise assault was all the more shocking because of the thick grotesque figures dancing about on shafts of violet light, spraying death freely from above. They fled to the cover of their buildings as the dense swarm settled over the city where they were met by the embattled terrestrial workers pent up inside. Totally confused as they were, the Venusians did not yield up easily even though between two fires, but fought as stubbornly as any ancient legion of Visigoths—ray for ray, and eye for eye they resisted to the bitter end.

Rotenstedt and Spear swept down into the city with the vanguard like two avenging black phantoms, heading for the power plant. With the desperate assault beginning on land and in the air, both men descended to plant broad feet on the ground.

Phsss-s-s-s—st!

A brilliant beam spat at them from the power house somewhere.

"Look out," Spear warned. He leapt into the air, and again the beam spewed forth—this time closer and in a fat conic spray. No use wasting spheres on him till they could locate the man wielding it. "Come on—over here!" And he headed for the lee of a big ledge that protruded above the ground.

In the safety of their rock haven Spear pointed to a number of Venusian planes flitting about in the sky, wreaking havoc among the Earthmen.

"There's what we have to stop, Roty. If we can only get in there, we can wreck their power broadcasters and bring those planes down!"

"We don't have to get inside, Spear. Ruin those banks of condensers outside, and they're helpless!"

"Say—that's an idea!"

In the flicker of an eyelid they rose into the air and faded back from the power-plant. Into the horizontal—and they were whistling through the cold air like two flaming meteors one above the other. In a flash they were past the long rows of lenses, raking the two upper banks with their automatics and sending in a hail of death. In a long series of explosions the glass eyes of solar power popped out in a wild, musical dithyramb of crashing and tinkling, the fragments torn into fine crystalline dust. An adroit swooping and reversing beyond the farther end; back again—and the bottom row was annihilated in a similar series of close-timed explosions. But their initial victory was not bought cheaply.

A riot of flashing streams blazed up into the sky at them as they flew by the end of the power house. A dozen or more Venusians were scattered over the ground, prepared to greet them with a spluttering of insidious death. Too late to prevent the complete destruction of their power-plant, they were now out to demand a reckoning—the priceless possession, life.

"Got me!"

God! What was happening? Rotenstedt —! Falling, tumbling over and over—sprawling out in the crazy gyrations of a falling leaf. Part of his chest-plating gone—all black—no, there was some dark blood beginning to ooze out through the black crust.

With a desperate circling swoop Spear dove headfirst for the plunging Norwegian. Close quarters to the Venusians spraying the vicinity with all manner of hellish

death beams—no chance to fire back. How in the world would he be able to keep from crashing once he caught Rotenstedt—not to mention escaping from the Venusian rays?

Steady—steady—there, right around and under his arms he was grabbing him. With a flick he gave the power beams at his shoulders all the remaining energy left.

Maybe he could hit something if he fired at random down there with his gun braced against Rotenstedt's back. The automatic shivered with the ejection of the spheres. A burst of orange flames down there and one Venusian less—and another one, a greasy faced one he saw before the man disappeared in dust—Antorg!

A MIGHTY strain, a heave and he rose high into the air with his dead weight. Frightened, he gazed at the limp head lolling around in the quartz bulb—called frantically through the phone system—but Rotenstedt was completely out. Peculiar green splotches were gathering in his cheeks where once had been rosy pink. Damn 'em, the Venusians had done for him!

He took the limp Norseman to one of the big hovering ships of the Earthmen high over the city. Doctors were on board. Ransel.

"The transverse motion of the vertical beam took away the skin covering his breast shell, Spear. I—think he's got a chance to live!"

"Good! They're going to pay a bloody price for this work!" And Spear dropped through the bottom hatch of the ship like a plummet, descending to the bitter dog fight raging in and around the streets and buildings below. Closer and closer was coming the end—a costly end for both sides with the Earthmen reaching for inevitable victory.

He fought like a Trojan, fought with a hot fury that knew no mercy. No one of the Earthmen dove so hard, fired so quickly nor quite so deadly as the infuriated Spear. Kill, kill, kill was in his veins—he was the personification of a terrible Nemesis.

It was he who led the attack on the largest tower where the Venusians were most strongly entrenched with heavy, broad beam-projectors. And after that victory, it was he who thought of filling a whole apparalon full of the deadly spheres, and aiming it at one of the last buildings —one of the Venusians' last stands where they doggedly repulsed sally after sally of Earthmen. He was the very spirit of the attack, playing a vital hand in every strategic move.

Mohler was beginning to exult over their seemingly complete and hard won victory, when from an elevation in the air he saw a pair struggling on the ground outside of a big hemispherical structure reamed with rows of black round windows—a space ship! So, they were preparing to leave for Venus, eh. Pull out under his very nose—maybe leave a detachment of their soldiers to perish defending them while they escaped scot free. Something looked very familiar about both figures. He swung down closer, and then gasped. By the little gods—Rolkar again, and struggling in his arms frantically—Edith!

A cold fury tingled in his arms and fingers as he twisted the rods into horizontal, and let a blast of power flame out the silver balls at his shoulders, sending himself like an arrow at the Venusian prince. Too close quarters to fire at him—might hit Edith. He'd use his fist as he swept by and up again. No Venusian prince could abduct the girl—he wanted her too much himself.

But as he darted at Rolkar with the sheer, clean flight of a spearhead, the Venusian chanced to look up. With a violent wrench he threw the girl to the ground—plucked at his side. Spear swore. Damn it, he was hauling out one of those vicious ray pistols he'd been dodging. Wonder if he'd hit him before the prince could ray him? There—he was pointing it—certainly a cool headed rascal to stand there while he was coming at 'im like an avalanche!

Phssst!

God, what a molten stream of visible power! Right in his face—no, at his shoulder—and the violet power was sputtering from the end where had been a silver jet. It was pushing him over—he'd crash Rolkar right in the—!

* * * *

A murmuring of voices penetrated to Spear's consciousness. He seemed to be groping futilely around in darkness. His blue eyes fluttered open. A woman—he squinted to see better—Edith, had him in her lap. God, how his head ached on top! And there was Arrhenius—kind of funny looking with his little head poking out the top of a headless, overgrown armored coverall.

"Where's—Rolkar?" he muttered.

"You made a good job of him!" Arrhenius exclaimed, "In fact you made a good job of this whole attack, Spear, my boy. If it weren't for you, this whole attack might have failed. Rotenstedt has told me the entire story of how you outwitted Rolkar and Mhor."

"Rotenstedt!—how is he?"

"Getting along splendidly—told me about the fun you both had breaking windows up at the Venusian powerplant!"

"Didn't you hear Rolkar's broadcast to you?" Spear asked in perplexity.

"You bet we did! We were halfway here at the Pinnacles when we got it, and we came mighty near turning back when we heard the news!" he exclaimed soberly, "but when we saw that huge sheet of almost invisible violet shimmering up there in the north, we knew what had happened. It was the signal, and we came on with a vengeance then!"

"Where's the space ship I saw here?"

"Gone! Some of the leaders got away, and made their escape in the ship after they were utterly defeated. You saved Edith from a terrible fate of spending the rest of her life on Venus as a slave."

"Now, father, you've talked long enough," Edith reproached the scientist, caressing Spear's cheeks, "he needs rest."

For a meditative moment Arrhenius gazed down at the young couple.

"Yes, on second thought, he'll need some—because as my son-in-law and chief engineer of new Terra, he's got quite a job of reconstructing this city he destroyed so effectively!"

THE END

REIGN OF THE STAR-DEATH

By **A. Rowley Hilliard**

(Illustration by Paul)

Hands were clutching at his throat. He caught a glimpse of a black snarling face, as he found the switch and threw it over.

THE REIGN OF THE STAR-DEATH

By the author of "Death From the Stars," "The Avenging Ray," etc.

THE Coroner cleared his throat, and spoke briefly to the jury. "Now, gentlemen, you are acquainted with the—ah—the external circumstances of the tragedy. You have seen photographs of the burned house in Great Neck and of the—ah—gruesome remains. You have heard medical testimony to the effect that these remains constitute the charred bones of two men. It would appear, therefore, that they were burned to death. But—"

The pause that the Coroner had meant to be impressive was rendered rather ridiculous by his obviously painful excitement and by the nervous twitching of his upraised hand. He was a small, sandy-haired man, with light-blue eyes that blinked quickly at irregular intervals. It was clear to everybody in the room that his official duties weighed upon him heavily.

—"But," he continued shrilly, "in an event so strange, so inexplicable as this, we must look beneath first causes. Our task, gentlemen, is to determine not only the manner of death, but also the *reason* for the death of these two men. In other words,"—here the Coroner, by lowering his voice and almost whispering his next words, managed to get a really fine dramatic effect—"has murder been done? . . . Or," he added, relaxing and smiling feebly, "was the whole thing just an accident?"

His audience, understanding these questions to be purely rhetorical, kept silent. The Jury, to a man, leaned forward eagerly, paying tribute to the speaker's eloquence, as did the row of witnesses and the bloc of mere spectators. Only the newspaper reporters and the attendants appeared unmoved.

"We must probe deeper into this mystery," continued the Coroner grandly. "And I think our first concern should be to establish definitely the identity of the two men who we are morally certain were the victims of this—ah—this tragedy . . . About one of them we are fairly certain. He was George Dixon, owner of the house—a young bachelor, who lived there alone. He was a scientist and writer. He had lived in Great Neck for years, and was highly respected by everyone who knew him . . .

"But the other,"—here the Coroner lowered his voice again, significantly—"the second man—is mysterious. He was a stranger in Great Neck; no one there remembered ever having seen him before the day of the fire. Only his name was known—Julius Humboldt; and for a time I despaired of finding out anything else about him. Then Dr. Herbert Jules came to my aid. I am sure Dr. Jules needs no introduction. I am going to ask him to take the stand."

A. ROWLEY HILLIARD

THE great chorus of applause that greeted Mr. Hilliard's finely worked out "Death from the Stars" led us to ask him for a sequel. We felt that the mystery of the Death was not fully explained, nor had its career of terror ended. From this marvelous and gripping sequel we see that the terror has but begun, and that before it ends it will have plunged civilization into as great a crisis as it has yet faced.

Mr. Hilliard poses the question: suppose in order to save a million people it is necessary to kill in cold blood ten thousand innocents? What should society do? What would you do if you had the power to save or condemn the ten thousand and endanger the million? What would you do if you were one of the ten thousand condemned, or one of the million threatened by the ten thousand? This story is a gripping challenge to our modern civilization, as well as a thrill story from the first word to the last.

Herbert Jules was well known in Nassau County, because he was a considerable landholder, and because of his wider fame as a scientist. Furthermore, the name of his late father, Lorian P. Jules, was literally a byword throughout the whole of Long Island. He it had been who rid the territory of the menace of the man-hunting weasels which, ten years before, had threatened the destruction of the whole of New York City.* Lorian Jules, experimenting with X-rays on animals, had created the beasts; and they had gotten out of his control, running wild over the Island, slaying men and women for their food. The story of his struggle with them had thrilled the country; and his final victory had raised him to the stature of a national hero.

Herbert Jules' testimony, after the Coroner's dramatic introduction, came somewhat in the nature of an anticlimax. He was a cool, calm-looking man—of medium height and slim, dressed immaculately in dark, well-fitting clothes. His small, neat, black beard and the ribboned, rimless *pince nez* he wore heightened his matter-of-fact professional air; and his testimony was in keeping with his person.

He explained briefly that he had met Julius Humboldt at Columbia University when the latter had been teaching biology at that institution; that he knew that Humboldt had since left Columbia, but had no idea where he had

*See "The Avenging Ray," Spring 1931 WONDER STORIES QUARTERLY

gone; and he finished with a few remarks regarding Humboldt's character, the substance of which was that he had appeared to be a man of the highest integrity in no way addicted to violent or criminal activities.

The net result of Jules' testimony was to release the tension in the room considerably. The Jury relaxed, obviously feeling that the Coroner's "mysterious stranger" had turned out to be something of a flop. That gentleman, however, was only slightly damped; and when Jules had finished he rose nobly to the occasion, with the assurance of a man who has the facts on his side.

"Thank you, Dr. Jules," he said graciously. "Humboldt may be blameless, as you say; but there are several strange things that must be explained before we can be satisfied about it . . . Now the clerk will read the testimony of Police Officer Patrick O'Brien, who is unwell and not able to attend this inquest. Officer O'Brien was sent up to the Dixon house on the afternoon of the fire, because a neighbor had reported strange sounds and—ah—screams coming from the house earlier in the day . . ."

OFFICER O'BRIEN'S testimony was to the effect that, arriving at the Dixon house, he had been met at the door by the man Humboldt, who had refused him admittance, saying Dixon was not at home. Wanting to do his job well, he had argued with the man Humboldt, but to no avail; the latter would not admit him. Finally the officer had gone off to get the advice of his superiors—and a search warrant if they thought it necessary. When he did return, it was to find the house in flames—flames that quickly reduced it to a pile of ashes and debris.

But what chiefly interested the hearers were three apparently irrelevant items of information in the officer's report. They are perhaps best told in his own words, as read by the Clerk.

The first came near the beginning of the document: ". . . When I first got there, I was looking around; and it looked like they'd had a fire. The grass up against the house was all black and burnt-looking. I walked around to the back. It was like that all the way around. Then I rang the doorbell . . ."

Again: ". . . While I was talking to him" (Humboldt) "I was looking at his face, and there was something wrong with it. The skin was all grey, and there was black splotches. I said, 'What's that on your face?'; and he jumped and sort of drew back, but didn't say anything . . ."

And again: ". . . I was just leaving, when a big truck drives up to the door. I saw Humboldt looking at it sort of nervous, so I said to the driver, 'Well, what do you want?' The driver says, 'I got the coffin.' *'Coffin?'* I says. 'Yeah, the lead coffin,' he says . . . 'What's that for?' I says to Humboldt. He said it wasn't any of my business, but I said it darn well was my business. 'We don't have any funerals around here without the undertaker,' I says. Then I told the driver to take the coffin down to the police station. Humboldt didn't say anything . . ."

This last item caused something of a stir in the room—a stir which the Coroner seemed to regard in the light of a personal triumph.

"That coffin is still at the police station in Great Neck," he said impressively. "It is made entirely of lead, about an inch and a half thick. We have discovered that Humboldt ordered it by telephone from a firm in the city. He made it a rush order, and said he would pay anything to get it by that afternoon!"

The coroner paused, and there came an appreciative murmur from his audience. Dr. Herbert Jules, sitting near the front of the room, stared fixedly into space, a slight frown creasing his high forehead. He no longer appeared to be listening.

"Now we will hear from John Pew, who operates a gasoline filling station on Soundview Avenue not far from the Dixon house . . ."

Mr. Pew, taking the stand, deposed that he had sold to the man Humboldt ten gallons of gasoline, in tins, on the afternoon of the fire, at exactly five-thirty.

"You will note, gentlemen," said the Coroner, "that this transaction took place just fifteen minutes after Officer O'Brien left that house, threatening to return . . ."

Mr. Pew then went on to explain how he had taken the gasoline up to the Dixon house in his car. He confirmed Officer O'Brien's report on the strange appearance of the grass, and:

"Yeah. There sure was somethin' wrong with his face. The skin was all black and rotten-looking . . . He acted queer, too. He seemed awful anxious to get rid of me; and he said, 'Don't stand near me. Keep away!' . . ."

Herbert Jules started violently in his seat, and from then on paid not the slightest attention to the further proceedings of the inquest, which consisted, in the main, of a very fine speech by the Coroner to the Jury. Jules roused himself in time to hear the painfully indecisive final verdict of that latter organ, which stated, in effect, that the deceased, George Dixon of Great Neck, Nassau County, State of New York, and Julius Humboldt, place of residence unknown, had met their deaths, probably by burning (although not necessarily); the reason for death being, in the case of Julius Humboldt, probably suicide, and in the case of George Dixon, possibly murder at the hand of the aforesaid Humboldt (although not by any means necessarily).

DR. JULES, having caught the Coroner's eye, remained in his seat while the assemblage dispersed; and, when the latter had finally got rid of the somewhat derisive newspaper reporters, arose and approached him. The Coroner was plainly unhappy, and was talking to himself in a low, sad voice.

"Most unsatisfactory! Most unsatisfactory! I had hoped for something definite. Murder and suicide; murder and suicide—that was it . . . And yet—" He wrung his hands, and gazed at Jules. "Mysterious business! . . . No head or tail . . . No—"

"Mysterious is the word, Dr. Gibbs," put in Jules kindly. "I think you did remarkably well under the circumstances."

"Thank you, sir . . . Thank you!" exclaimed the little man gratefully. "I did my best . . . But I must be frank with you, Doctor. I don't understand it—not a bit! There are too many unexplained circumstances."

"Yes." Jules nodded slowly. "There are." After a short pause he asked, "Do you happen to know what is the matter with Officer OBrien?"

Gibbs looked vague. "Well, no—I don't. I just heard he was unwell, and hadn't reported for duty."

"Where is he—do you know?"

"Yes. He is at home. He has a small farm outside of

Port Washington. Raises chickens . . . My secretary had to go out there to take his statement, day before yesterday. Said O'Brien was just feeling bad. Hadn't needed medical attention . . ."

"You are County Health Officer, are you not?"

"Yes," admitted Gibbs.

"Are you busy this afternoon?"

"Well, I have nothing more than my usual routine," said Gibbs hesitantly. "Why, Doctor?"

"I am driving out to Port Washington, and I wish you would come along." Jules glanced at his watch. "It is now twelve-thirty. My car is outside. We should be back before two." He looked questioningly at the other.

"Why, certainly . . . I—" began Gibbs confusedly. Then his eyes widened. "O'Brien? You mean—"

"I mean that I am a little worried about Officer O'Brien," said Jules quietly. "I should feel easier if I knew exactly what was wrong with him." He gestured towards the door. "Shall we go? We can talk in the car."

Outside, they entered Jules' large and luxurious car. Jules spoke to the driver. "We are going to Port Washington, Jeremy. After that, Dr. Gibbs will direct you."

As they rolled out of Mineola, Gibbs fidgeted visibly. Soon he became vocal. "Do you think there might be some connection, sir, between O'Brien's illness and—and this other business?"

"It seems hardly possible, I admit," smiled Jules. Then he continued seriously, "But that bare possibility worries me so much that I am willing to cause you all this trouble on account of it."

Gibbs said it was no trouble at all, and maintained his questioning attitude.

"Do you," asked Jules slowly, "remember Mr. Pew's statement that Humboldt said to him, 'Don't stand near me. Keep away!'? . . . What does that suggest to you?"

"I've been wondering about that." Gibbs pursed his lips, and nodded jerkily. "Sounds crazy . . ."

"Suppose we assume him sane," insisted Jules. "What then?"

The Coroner considered. Then: "Well, there might have been something Humboldt didn't want Pew to see. The black spots!"

"Pew could see the black spots very plainly," Jules reminded him patiently. "You are making the mistake, Dr. Gibbs, of assuming Humboldt to have been a villain. Concede him altruistic motives for a moment. Suppose it was Pew he was worried about—not himself . . ."

"Oh!" Gibbs started, and his eyes widened. "You think there was something wrong with Humboldt that—that could have hurt Pew . . . ?"

"That is what I am afraid of." Jules shifted in his seat, and looked earnestly at the other. "I hope you won't think me an alarmist, Dr. Gibbs; but let us suppose one more thing. Suppose that, arriving at O'Brien's farm, we should find his face blackened, in splotches or spots . . ."

CHAPTER II

A House of Desolation

THE Coroner gasped. "Disease! . . . But—but I don't know of any disease like that . . ."

"Nor I." Jules was silent for a time. Then: "What does a lead coffin suggest to you?"

"I don't understand that at all," confessed Gibbs.

"To the scientist," continued Jules, "I believe that lead suggests, primarily, a shield—a barrier. At least, that is what occurred to me immediately when I heard it mentioned . . . And then, that black grass . . ." Jules' voice trailed off into nothingness, and for a time there was silence in the car.

"Do you—don't you think he wanted the coffin for Dixon?" ventured Gibbs.

"Yes, I think so," answered Jules abstractedly. Suddenly he shook himself, and straightened in his seat, his lips tightly pressed together. "I can't rid myself of a feeling of foreboding," he said; and continued in a low voice, "Gibbs, there was something terrible in that house—something weird and deadly—something that had Humboldt in its power. He was fighting for his life—and for the lives of others . . ."

"I knew there was something out of the ordinary, but I don't understand it at all," said Gibbs helplessly.

"I have the advantage of you," replied Jules. "I have scientific training, and I have run across a clue that you would naturally have missed. I call it a clue. It may be nothing of the sort. It may be an entirely unrelated incident. But, at the risk of making you think I have taken leave of my senses, I am going to tell you about it.

"About a month ago I happened to be looking through a scientific periodical, and I ran across an article by this same George Dixon. He was expounding a theory. His theory was, in short, that there might very easily be life existing in a state of suspended animation in substances deposited on this earth from outside—that is, in meteorites . . ."

Mr. Gibbs looked shocked, but made no comment.

"This is by no means a new idea," continued Jules. "Many have used it to explain the advent of life on our planet. The novelty in Dixon's case was that he planned to do something about it. He had a meteorite, and he was experimenting on it—searching for the life he believed was there."

"Well!" said Mr. Gibbs blankly.

"'Life' is, of course, hard to define. We know, in a general way, what it is on our own earth. But what is it in other worlds? How would one recognize it? Dixon planned to use the function assimilation as an indicator. He was looking for something that increased itself at the expense of other things. Perhaps he found it, perhaps he didn't; but if he had—that would explain a great deal!"

They were in Port Washington. Gibbs directed the driver to continue north, out Manhasset Neck, for three miles, then to turn right on a small dirt road.

"You see, Gibbs," continued Jules, "it is all very well to talk about 'life from another world'; but, when you have found it, what then? The chances are it has developed under a set of conditions entirely different from your own. How will it act? Will you know it when you see it? And, above all, will you be able to handle it? Assuming it to be 'something that increases itself at the expense of other things'—what will those other things be? What will it attack? . . .

"It seems to me that Dixon's experiment was a dangerous one. I doubt if he fully realized its danger—at first, anyway . . ."

Gibbs was sitting on the edge of his seat, his eyes wide,

his mouth half open. He looked bewildered and unhappy. Suddenly Herbert Jules relaxed, and smiled at him.

"You are probably thinking I have gone out of my head; and I have no doubt you are right. My over-developed imagination often runs away with me. So if our trip is all for nothing, I hope you will be charitable and not tell too many people about it . . . Now, I judge we have arrived."

Their car had been bumping down a narrow dirt road through the woods, and now drew up before a green-painted gate. They descended, and stood for a moment looking at the small, neat cottage, the fenced-in chicken yard, the well-kept lawn and shrubbery.

"A charming place!" exclaimed Jules. He pushed through the gate, and walked slowly down the path, Gibbs following. His eyes were darting to right and left. Suddenly he stopped, and said, "Look!"

GIBBS followed the direction of his gaze. The wire fence of the chicken yard was nailed to the left-hand corner of the house. The green lawn stretched right up to this fence. But at the very corner, up against the house, was a place where the grass was gone. In its place was a little patch of jet black dust. And directly on the other side of the fence from this patch, two hens lay on their sides, clucking softly and flapping their wings in feeble spasms.

"Come," said Jules briefly. He threw open the front door, and they entered the large central room of the cottage. "Only one story," he muttered. He glanced around.

To their right, two doors led off—to their left, one. Quickly Jules flung open the two doors on the right, revealing a kitchen and a workshop—both untenanted. He pointed to the third door.

"Gibbs," he said levelly, "that is the corner room next to the chicken yard. O'Brien is in that room. I don't know how far gone he will be; but it's up to us to find out. We must go in there, but we cannot stay long . . . No matter what you see there—when I say get out, get out! . . . Understand?"

"Yes, Doctor—yes!" Gibbs nodded vigorously.

Jules stepped quickly forward, and opened the door. The room was empty. Jules stared at the rumpled bed.

"Gone," he said softly, and repeated, "Gone!"

Suddenly he stiffened. From under the bed came a scratching sound, and a low, whining growl. They backed away, as there emerged a strange creature. It was a dog; but it was hairless, and coal black; and its eyes were gone. It was sniffing at them, and moving forward with jerky convulsive movements.

"Look out!" cried Jules.

The creature howled suddenly, and leaped directly at them. The two men backed through the doorway into the large room; but the dog's leap brought it into contact with Gibbs, and it fastened its teeth tightly about his ankle.

"It's mad!" he screamed.

On the table in the center of the room lay a revolver. Without hesitation Jules placed it against the dog's head and fired, once. The animal crumpled to the floor. "It was worse than mad," he said grimly. He looked thoughtfully at the revolver. "O'Brien must have forgotten this," he said. He slipped it into a side pocket. Then:

"Gibbs, we've got to find O'Brien—in a hurry! Now, let's get out of here!"

Outside again, they heard themselves hailed. A man was leaning over the gate. "Lookin' fer O'Brien?" he inquired.

"Yes," said Jules briefly. Followed by Gibbs, he made for the car.

"Well, he's gone to the city."

"What!" cried Jules.

"Yeah. He come over to my place about an hour ago, wantin' to use my telephone. Said he was sick; an' he sure looked it! Said he was going into the city to see a specialist, an' had to make the one-fifteen train. He drove away about ten minutes ago. You jest missed 'im . . ."

Jules swung around upon the driver. "Did we pass any cars on this road, Jeremy?"

"Yes, sir. A Ford . . . Just as we turned in."

Jules jerked out his watch. "Can we get to the Port Washington station in six minutes?"

"Yes, sir!" said Jeremy confidently.

"Turn the car!" snapped Jules. He spoke to the gaping man: "Did O'Brien get near you?"

"Why, no—not very," began the man slowly.

"Was he in your house long?"

"Jest a few minutes . . . Say! What in thunder—?"

Jules cut him short. "Listen! O'Brien is suffering from a terrible disease. Don't go near his house. Don't let anybody else go near it! . . . Come, Gibbs!"

The car swung around beside them, and the two leaped in. It started with a roar.

"Gibbs,"—Jules spoke rapidly—"that cottage has got to be burned—that and the grounds around it. If we don't stop this thing, you are going to wish you never were County Health Officer! It's something *new*—understand? I called it a disease, but it's not that, as we understand the term. It's a new activity—unearthly—from another world!"

Gibbs rallied himself, to make a feeble protest. "Doctor Jules, are you sure . . .?"

"I am certain! . . . Now, listen. Here's the solution to your Great Neck mystery. Humboldt burned that house—and himself—for the same reason you're going to burn the cottage, trying to end this thing . . . Dixon was dead—killed by the thing he let out of that meteorite—the thing he was looking for, but couldn't understand. He couldn't deal with it because it was entirely different from anything he had ever experienced . . . It passes through walls, glass, everything; and it attacks all living things. That explains the black grass around the house. That explains Humboldt's lead coffin. He was looking for something that would hold it—stop it spreading from Dixon's body. And all the time he was rotting, himself—rotting and dying. God!"

Their car was careening through the outskirts of the town. Jules glanced at his watch, and nodded jerkily.

"Now do you see why we've got to stop O'Brien—at all costs?"

"Y-yes." Gibbs was blinking rapidly, and trembling with excitement. "But—but—" he began, and choked. He was still making ineffectual noises when the car skidded to a stop beside the station platform.

PORT WASHINGTON is at the end of a branch of the Long Island Railroad; and the train was in the station,

waiting to pull out, when Jules leaped to the platform.

A man in a blue uniform was walking slowly towards the steps of one of the cars. Seeing him, Jules cried, "O'Brien!"

The man stopped, and turned. He peered uncertainly in Jules' direction. Jules approached, eyeing him intently. O'Brien was a middle-aged, heavily built man with a square, bull-dog jaw and generally truculent air. He appeared unable to focus his eyes on Jules; and when he tried to stand still he swayed violently, taking quick sidesteps to keep his balance. Jules stopped a few feet from him, and said quietly, "O'Brien, you are a very sick man. I have brought a car to take you where you will be cared for properly."

The policeman growled. "Who're you? I know I'm sick, don't I?" Swinging about, he lurched towards the train steps.

Jules followed him quickly, saying, "Wait!"

O'Brien swung around, clenching his fists; and said testily, "Listen, Mister, I don't feel good enough to argue with you now, so—"

"You've got to listen to me," said Jules tensely. "You are suffering from a highly contagious disease. If you get on that train,"—he gestured at the nearest car, where rows of interested faces were peering at them through the windows—"you will seriously endanger the life of every passenger . . ."

O'Brien appeared to hesitate. "But—" he began. Two sharp whistles came from the train. "But, Mister, I've *got* to go to New York." He raised his hand weakly, and stroked the large squares of court-plaster that almost covered his face. "He—the doctor—he said if I didn't hurry I might die . . . An' he didn't say nothin' about it bein' catching . . ."

The train was moving slowly. Muttering unintelligibly, O'Brien turned, and grasped at one of the hand-rails. Jules spoke with desperate emphasis.

"You can't go, O'Brien. You'll kill every man and woman in the car with you. You—" Jules stopped suddenly, realizing his mistake. O'Brien had pulled himself to the steps. Now he turned angrily, baring his teeth.

"Yeah!" he snarled. "*You're* the guy was gonna save me—an' now you say you can't save nobody." He spat viciously. "Go to hell!"

The train was picking up speed. Jules saw O'Brien, still on the steps, moving rapidly away from him. He was aware of Gibbs beside him, chattering in a high, distressed voice. "You can't stop him, Doctor! We have no right—no authority. We—"

Jules sprinted beside the train. When he came parallel with the steps he clutched at O'Brien's leg. Chuckling harshly, O'Brien bent up his knee, and then straightened it suddenly. The kick caught Jules beside the head. He whirled around, lost his balance, and fell heavily. Panting, he drew himself up on one knee. He could still see O'Brien, who was swaying on the steps, clutching at the hand-rails. Jules took the revolver out of his pocket; and, aiming carefully, fired once.

O'Brien toppled slowly from the steps, at the very end of the station platform. His head struck first, with a sharp, cracking thud; and he lay still, face up.

Jules stood up, still holding the revolver. When the agitated Gibbs reached him, he did not turn his head or take his eyes off of O'Brien. He spoke through stiff lips.

"Find out how badly he is hurt—quickly!"

The train was grinding to a stop. Gibbs approached the quiet figure on the platform, and knelt over it. In a moment he was facing Jules.

"Dead!" he said pallidly.

All around were shouts and the thudding of footsteps. People were running towards them from the station and street.

"Come back here," said Jules tonelessly.

Gibbs came back, wringing his hands. "My God, Jules! This is awful . . ."

"Yes," Jules agreed grimly. "Now, Gibbs," he went on, speaking low and very fast, "you've got to keep faith with me. No matter what happens to me, you follow my directions. Understand? . . . It's your job . . ."

CHAPTER III

Arrested for Murder

FROM the rear of the now stationary train excited people were pouring out. More were arriving from other directions. They were shouting at Jules and Gibbs, and they were crowding curiously towards the body of O'Brien. Jules looked up, frowning. He raised his voice, saying very slowly and distinctly, "Get away from that body. Stand back!" At the same time, he moved the muzzle of the revolver steadily to right and left.

His gesture had the desired effect. With startled shouts from the men and screams from the women, the front rank of the crowd surged back, fighting with the others to get out of range. Came the sound of a police whistle.

Jules was speaking sharply to Gibbs: "You must take charge. Allow no one within twenty feet of it. Get that lead coffin from Great Neck. In a hurry. Put the body into it. Permit no autopsy. You have performed the autopsy already. Understand? . . . Now go and find a policeman."

The last order was unnecessary. Three policemen were running towards them, splitting a path through the crowd. The foremost was hurling out commands and questions . . .

"Out of the way, you! . . . What's happened here? . . . Hey—drop that gun!"

Jules did not drop the gun; but leveled it again at the crowd, which, reassured by the policemen's presence, was surging closer to O'Brien's body. A second backward movement was the immediate result. Gibbs perceived the necessity for action. He stepped in front of the foremost policeman, as the latter came charging up.

"Officer, I am Gibbs, County Health Officer . . ."

"Yes, sir . . . But—" The officer was impatiently trying to get past Gibbs, but the latter held his ground. He pointed to the body.

"That man had a terrible disease . . . Contagious . . . Don't let anyone get near the body."

"All right, sir. We'll throw a cordon around it." The officer finally managed to push his way past the other. "Now, what happened? Hey!" he exclaimed suddenly, "It's O'Brien—the Great Neck man . . ."

"He was shot through the leg," explained Gibbs. "He fell from the train, and fractured his skull . . ."

"But who shot him?" thundered the distracted policeman.

"I shot him." Jules handed him the gun.

The officer gaped into his calm face. Finally: "Well, what'd you shoot him for?" he exploded.

"There is no use going into that now, I am afraid," answered Jules a little wearily. "It was necessary."

"Oh yeah? Well—" The officer's indignant retort was cut short suddenly as a light of recognition came into his face . . . "Say! Ain't you Herbert Jules . . . ?"

"Yes," Jules nodded. He looked tired. His clothing was white with dust; and above his right eye was a small cut from which the blood trickled. His countenance, however, was impassive, expressionless, as he faced the officer. The latter looked uncomfortable. He was silent for a moment, shifting from one foot to the other and scratching his head uneasily. To him the name Jules stood for all that was respectable, correct, and even admirable. It stood high among the great names of residents of Long Island, of which there were many. Yet here was Herbert Jules calmly admitting he had just shot a policeman—shot him and killed him, apparently. The officer felt confused.

It was with relief that he remembered suddenly that his responsibility was not judicial in scope. His duty was perfectly clear . . .

"Well, sir," he sighed, "I suppose you know we gotta send you to Mineola . . ."

"Of course," said Jules quickly. "My car is here—with a driver. Can that be used?"

"Yes, sir. Sure! But we'll need to send a man . . ."

"Of course," repeated Jules. He turned to Gibbs, who with the help of the two other policemen was busy keeping back the crowd. "Dr. Gibbs, I think you should take care of that cottage tomorrow morning at the latest. It should have a guard around it now. Good luck!"

Gibbs held out his hand. "Good luck to you, sir," he said fervently. "I'll do it."

Dr. Jules was taken to Mineola; and, that night, lodged in the Nassau County jail. On the following morning, before Supreme Court Justice Wilkerson, he was indicted on a charge of Second Degree Murder and pled "Not Guilty." The trial date was not definitely fixed. In spite of the Judge's anxious and friendly inquiries, Jules refused at the time to give any explanation of his conduct. He wanted time to think; realizing, with a feeling closely akin to fear, that his explanations, expressed in their present form, would sound hopelessly wild and unconvincing in a court of law.

REGRETFULLY the Judge explained that, because of the seriousness of the indictment, bail could not be admitted. Jules was forthwith returned to his cell.

There he immediately began reviewing in his mind the events of the last twenty-four hours, the facts of which he could be certain, and particularly the theories he had evolved to explain those facts. It was borne in upon him more and more oppressively every moment how definitely and inescapably he was now committed to those theories of his—those theories so hastily evolved and so little considered.

His scientific mind now rebelled against conclusions so recklessly drawn, as he realized how scanty and bizarre was the evidence in support of them. Again and again he went over in his mind the train of reasoning which had led him so quickly into violent action; and each time it appeared more flimsy than the last, until it seemed to him he must have been mad the day before.

In this state of mind, he refused to see anybody—even his frantic lawyer. He was determined first to decide for himself whether he had been justified in shooting O'Brien—or whether he had merely committed a murderous mistake. He could not, however, refuse to see Dan Hogan, because Dan Hogan was Sheriff, and an extremely forceful man.

Hogan had been on vacation, in the Adirondacks; but, getting news of the Port Washington tragedy, chartered an airplane, and arrived in Mineola on the second day of Jules' incarceration. Proceeding directly to his office, he sent for Jules; and, when the latter had been brought in, cleared the place of policemen and locked the door.

"Jules, what in God's name is this all about?" he cried, waving the other to a chair with a wide gesture of one of his great arms. He was a mountain of a man, Hogan, with powerful, broad body and handsome, leonine head. Usually slow-spoken, the present torrential character of his speech testified to his extreme agitation. Jules, although still in an unsettled frame of mind, felt that he would rather talk to Hogan than to anyone else.

The two had been friends for years; meeting weekly at the local Chess Club, and repairing thereafter to a smoky, comfortable study in Jules' home, where they invariably sat until dawn, talking and arguing meditatively on any and all subjects. Hogan's duties as County Sheriff consumed only a very small part of his tremendous energy. His questing mind found in Jules a storehouse of information and ideas which he pillaged enthusiastically. Herbert Jules, on the other hand, found Hogan's intellectual curiosity a mental stimulus and a valuable agent for clarifying his ideas.

Now, therefore, he felt a certain relief at the prospect of unburdening himself to the other.

"Good of you to come," he said quietly. Of the two, he was by far the calmer, externally; but the lines of care on his forehead and about his mouth testified to the long hours of mental distress he had gone through.

"Good of me!" bellowed Hogan. He waved his arms about indignantly. Then he sat down heavily, and began to speak more slowly. "Jules, I'm a man that likes to get my facts straight from headquarters. Now, did you, or did you not, shoot a copper off a train in Port Washington, day before yesterday?"

"I did."

Hogan threw himself back in his chair, expelling a long breath. "Why?"

When Jules did not answer immediately, he said, "Not that you have to tell me if you don't want to, Jules, of course. But I'd like to know. You don't generally do things without good reason. I talked to Gibbs for a minute, but I couldn't get anything sensible out of him. Lot of stuff about shooting stars and dogs. . . No Jules, it's not curiosity. I'm no lawyer, but I can help."

Jules started to speak, quietly, looking directly at the other. "Dan, when I shot and killed that man I believed implicitly—without the shadow of a doubt—that I was doing right . . ."

After a short pause, during which Hogan nodded vigorously, Jules went on: "Murder, of course, is an act hard to justify. I remember your once saying that it could never be justified. I think I argued with you then, holding that

situations might occur which would make it not only justifiable but necessary."

Hogan was shifting in his chair restively, and was about to speak when Jules continued: "Now, I believe I have a good example . . ." He went on to tell briefly, the story of the day of O'Brien's death; beginning with the Coroner's inquest, and concluding:

"He was on the train—about to enter a crowded car. This is the way the situation appeared to me: He was carrying with him—Death. By the time the train reached New York, every occupant of the car would also be carrying Death—carrying it through the populous city—a death no man can understand, fight, or avoid . . ."

HOGAN'S heavy breathing was the only sound in the room. He sat far forward in his chair, his elbows resting on its arms, his hands tightly clasped together. He was frowning down at his hands, jaw out-thrust and forehead deeply creased. Twice he started to speak and stopped. Then:

"Oh dammit, Jules!" he exploded. "Of course you did right, if—if—" He stumbled into silence, shaking his head.

"Yes?" said Jules encouragingly. He was well aware of what was coming.

"—If there *is* any such thing as this Death you're talking about!"

In those words Jules heard expressed the doubt that had obsessed him—and come near to maddening him—during the long hours alone in his cell. But, now that he heard it expressed by another, he realized suddenly that it was not his doubt at all. It was merely what he had feared to hear from others. And, in that moment, he knew his own mind.

"There is such a death," he said quietly.

Telling the story to Hogan in words had helped—helped to crystallize his thoughts, to bring back clearly the reasoning he had used. "Nothing else can explain what happened," he added with conviction.

Dan Hogan leaped to his feet, and began pacing the floor, waving his arms widely. "Man alive! *I* believe you. I'd take your word for anything. If you say there's a mysterious Death around here—well, there *is*, as far as I'm concerned . . ." He stopped; faced Jules; and began spacing his words slowly. "But it's not me I'm thinking about. Right now, I'm thinking about juries . . ."

When Jules failed to answer, he went on more quickly: "And I'm thinking about the District Attorney, Matthews. He's a coming young fellow—and mighty nasty. Out for convictions. Hates me; and he's dead against your kind—everything you represent. 'Friend of the people'—Matthews . . . In his work! You know the kind . . .

"Good Lord, man!"—Hogan resumed his pacing—"as it stands now, you've got no case! Fifty people saw you shoot that man. If you're going to justify it in court, you've got to have proofs—proofs of what you've just been telling me . . . Damned good proofs! And," he added, raising his hands, palms upward, in an exasperated gesture, "as far as I can see, you've done your best to wipe out every proof you had . . . Getting Gibbs to burn 'em—and bury 'em. . . !" Suddenly he came to a halt beside one corner of the desk, and struck it heavily with his fist. His face cleared.

"Jules—there's only one thing to do. That body's gotta be dug up! . . . Gibbs had no right to bury it so soon, anyhow. It'll be easy . . ."

Jules half rose from his chair, and held up one hand in an arresting gesture.

"Dan," he said earnestly, "there is only one thing I am going to ask you to do. You must use all your influence to prevent *that*."

Gaping at the other, Hogan lowered himself slowly into his chair. "You mean," he said at length, "you're afraid you're wrong . . . ? But you said—"

"I know I am right," Jules cut in crisply. "There's the point." His speech, now, was quick and business-like. The lines in his face had smoothed, leaving it calm.

"Dan, you've listened to me; and you haven't understood a word I've said. I tell you there is a deadly enemy to mankind—to all life. You say, 'Yes,' absent-mindedly; and immediately propose letting it loose! Why, in one stroke you would nullify every effort I have made!"

Hogan was red in the face. "But, man alive—don't you see it? You're in a hole! They can send you to prison for twenty years—for life! . . ."

". . . And to prevent that you would risk thousands and thousands of lives," interposed Jules quickly. "Is that it?"

CHAPTER IV

The Disease Spreads

HOGAN threw himself back in his chair, and shrugged his heavy shoulders. "Oh come, Jules—it can't be as bad as that! The thing can be handled . . ."

"Handled?" Jules raised his eyebrows questioningly. "How? . . . I don't know—do you?"

"Well," hesitated the big man, suddenly at a loss, "if you don't, I guess I wouldn't . . ."

"Do you suppose I would have shot a man, Dan, if the thing could have been 'handled'?"

Hogan made no answer.

"If that coffin were opened," went on Jules, "the man that examined the body would most surely die. Whoever cared for him in his sickness would also die. And so it would spread. When people at last realized they could not fight this new death, it would be too late. Too late to isolate it—too late to confine it. And—"

"Jules, you're only guessing!" snapped Hogan. His jaw was set stubbornly. His eyes were narrowed to slits. "All that stuff *might* happen, you say. You can't be sure. But I say to you—and I *am* sure—that you're sunk, if you can't prove your case!"

"And the very proof you want to find is the disaster I have been trying to avoid!" added Jules, smiling faintly.

"Hell!" Hogan snorted. "All right, if they won't believe you, let 'em suffer a little bit . . ."

"You don't know what you're saying!"

"People can deal with diseases. You know that, Jules."

"The thing Dixon let out of that meteorite is not a disease," said Jules quietly. "A disease comes from a species of terrestrial life. Diseases are parts of the world we live in; and through countless ages of adaptation and development we have acquired means of protection against

them. We carry around special poisons in our systems for that very purpose . . .

"Do you realize what it means to live in this world of ours? It means being part of a tremendous but carefully balanced organization, *every* individual part of which occupies the position and the power it has been given as the result of millions of years of evolutionary adjustment.

"Of course we can deal with diseases! Any species which could not has long ago disappeared from the face of the earth. We? We are the Fittest—the Immune—Nature has selected the Immune by the simple process of killing off everything else. Nature is cruel . . .

"And so we have our organization: the integrated system of surviving species—each existing by sufferance of all the rest, and of the external conditions of matter which govern and determine all. It is a delicately balanced thing; yet on its continuance depends your life and mine, and that of every other living thing . . ."

Hogan was shifting about restlessly. It was clear that he believed time was being wasted. Before he could find words of protest, however, Jules was again speaking, very earnestly now.

"Now! From a far-off star—from a foreign and very different world—there comes a New life. Through a strange mischance it is caused to become active here; and, miraculously, it discovers there is food. It grows.

"The picture is changed. The delicate balance of our living world is destroyed. The New Life is strong; it must be given a place. A tremendous reorganization is inevitable. Every species must be altered to fit the new conditions. New forms must be developed; old forms must surely perish. Nature is cruel . . .

"The Immune are no longer immune. The old order comes crashing down. And you—and I—are no more than outmoded forms, condemned to death . . ."

Jules ceased speaking, and for a time there was silence in the room. Hogan was licking his lips nervously, and gazing at Jules with a steady, exasperated frown. At last, he found words.

"Jules, that all sounds very great and very terrible; but"—he threw his arms quickly up and apart—"it's in the air! It's theory! . . . You've made me feel creepy, I'll admit—but it's not *real*. It's too remote . . . I *can't* let it affect me. My job is a very real one—to save you. And I'm going about it in my own way."

"Dan," said Jules quietly, "I'm sorry I haven't convinced you. I wanted you on my side. To me, the thing is very real . . . I believe that there is a New Life on earth. My aim has been to destroy it—throttle it—before it had a chance. With fire I have tried—as Humboldt did—to destroy its food, and thus kill it. I have tried to confine its last remaining vestige forever, behind lead walls. It may conquer the fire; it may pierce the lead; I do not know . . . But that coffin must never be opened! You must promise me that. Otherwise, I will plead guilty to the murder without further delay."

DAN HOGAN got up, came and stood over Jules. "Jules," he said softly, "if there's one thing I like about you more than another, it's the way you stick to your guns. You had an ace in the hole there that I wasn't looking for—and you win . . ."

Jules stood up; and they shook hands. Hogan sighed. "Yes, I'm with you," he said heavily, "but I hope you change your mind. You're in a tough spot. You've got no defense to speak of. And the people are going to be against you. People're always against anything they can't understand—damn 'em!"

In the following days, Hogan's prediction was more than borne out. The New York newspapers—particularly the more sensational ones—seized avidly upon the O'Brien killing, and made of it daily front-page material. The fact that the victim was a policeman, the distinguished character of the murderer, and the public and brutal manner of the slaying made the story important from the very beginning.

When Herbert Jules, at first, refused to offer any reasons or excuses for his actions, interest and curiosity increased tremendously, and public indignation was born. But when Jules, on the third day, did attempt to explain his motives, the incredulity and antagonism of press and public reached a peak. Only the *Times*, in its conservative way, suggested that judgment be suspended; pointing to Jules' hitherto blameless behavior and many valuable scientific achievements, and heartily deplored the whole business.

The other papers showed not the slightest inclination to suspend judgment. In trying to explain his theory to a group of reporters Dr. Jules had used the word "rays," picturing the New Life as a species of penetrating, invisible radiation shooting out in all directions from its source of food and infecting any living substance in its path. Adding an ironic adjective of their own, the newspapers pounced joyfully upon this word; and used it with devastating effect. "TERRIBLE RAYS WOULD DESTROY WORLD, SAYS JULES" was a favorite headline; and "Claims O'Brien Was Broadcasting Death" or "Says Victim Was Menace to all Life" usually followed. Here was a new kind of alibi, and they made the most of it. The majority dubbed Jules a charlatan; the more charitable called him mad.

Gibbs, who had kept faith with Jules, obeying his instructions to the letter, came in for his share of abuse. The cottage which he caused to be burned had been rented to O'Brien, it proved; and the indignant owner immediately filed suit against the State for damages incurred. Furthermore, his summary disposal of the body of the murdered man—which he had coffined and interred on the very day of death—earned him a sharp rebuke from the Attorney General in Albany, who termed it "irregular procedure" and demanded immediate explanations.

Little Gibbs stood his ground firmly; but the only "explanations" he could offer rested on the theories of the universally discredited Jules, and he thus found himself in an indefensible position. The newspapers attacked him vigorously with such epithets as "over-credulous" and "incompetent"; and he quickly perceived that his tenure of office, both as Coroner and as Health Officer, must necessarily be short. Even the ardent championship of Sheriff Dan Hogan availed him little, and did more to hurt Hogan than to help Gibbs.

In the meantime, Peyton Matthews, District Attorney, watched developments with considerable satisfaction, anticipating an easy conviction with a good deal of pleasant notoriety attached. His only concern was to fight any and all delays which Jules' lawyer might propose, so that he might bring the case to a head while popular sentiment was so strongly in his favor.

As for Jules' lawyer, he found that his only stock in trade was delay, since there was no case for the defense. He was a very discouraged man. His client appeared to take not the slightest interest in his own welfare.

These, then, were the sensational and widely-heralded developments of the week following the killing of O'Brien; but the most important development of all went along very quietly and unobtrusively. It was observed, in fact, by only one man.

This was a Great Neck postman. For a score of years his route had lain along Soundview Avenue. He knew every inch of the way, and took a sort of proprietary interest in his surroundings. The burning of the Dixon house—where he had delivered mail for so long—was a great sorrow to him. He found it hard to adjust himself to the change.

ABSENT-MINDEDLY, he would turn in there; and sometimes get half-way up the walk before raising his eyes to the ruins and realizing his mistake. On one of these occasions, just as he was about to turn back, there came over him suddenly a strange, vague feeling that something was wrong. Puzzled, he gazed for a time at the black hole where the house had been—at the charred ground around it. Then, shaking his head, he went away. But on the following day he stood in the same place, scratching his head and knitting his brows uneasily. For some reason, the place seemed to look worse—the scene to grow drearier—every day. For three more days this impression annoyed him, until, of a sudden, he knew what caused it. The burnt part was bigger! in fact, it seemed to be spreading all over the place!

Now that he saw, he wondered how he could possibly have missed it before. Why, half the lawn was black! At first, it had only been burnt about twenty feet out from the house. He remembered that clearly; yet now, as he stood on the walk, the black part was almost up to him. He backed away, instinctively disliking that black grass; and seeing a friend, the gardener next door, hailed him. The gardener was as astonished by the phenomenon as the postman; and his trained eye caught further strange details.

"Look at that bush—and—Lord—the tree!" he exclaimed.

The thing at which he pointed was hardly recognizable as a bush. It was rather the thin, black skeleton of a bush. The branches were bare; the little stems held no leaves. Beneath it, on the ground, was a circle of black powder or dust. And the tree was even more strikingly peculiar in appearance. It stood near the center of the lawn. Its upper half was perfectly normal.

Green leaves moved and rustled in the light breeze. But its lower half was merely the black skeleton of a tree. The trunk and branches looked thin and wasted. As they watched, a blackened leaf detached itself from its stem, struck a branch, and dispersed in the form of sooty powder floating in the air. And on the ground was a small, dark, feathered object, which they saw was a dead bird.

"Well, what'd'yu think of that?" said the gardener.

Within half an hour a small crowd had collected around the two original observers, and all agreed that "there was something mighty queer about it." A policeman was attracted who, having looked, went away; and, in due course of official procedure, Sheriff Dan Hogan came to know of it. As a result, there was a cordon of policemen around the lawn that night; and on the following morning four steamshovels and an army of workmen were wreaking havoc on neighboring property, clearing a wide circle of bare earth.

For, as Herbert Jules worriedly explained to Dan Hogan and to Gibbs, it was clear that fire had not conquered the "rays."

"As far as we know, they feed on organic matter only," he went on. "Fire does not completely destroy organic matter. Therefore, it must be cleared away. Fortunately Long Island soil is sandy, and the thin top layer of vegetable matter can be easily removed. A cleared strip around the place should act as a barrier to the rays. We do not know how far they can travel unaided by food, but I do not believe it could possibly be more than a few yards . . .

"Of course the cottage out at Port Washington presents the same problem."

Jules was wrong there, however. The Port Washington problem proved to be an entirely different one—and that was really the fault of Gibbs.

On the day when, with the help of the local fire department, he had burnt the cottage, he had been at a loss to know what to do with O'Brien's hens. They had appeared perfectly healthy—all except two—and it had seemed to him unnecessarily cruel to kill them. Separated from the cottage by a narrow strip of woods was a small group of four houses, most of the occupants of which had quickly been attracted to the scene of Gibbs' activities. At his offer, they had gladly accepted the homeless fowls.

But almost from the first the birds had been sickly. The new owners thought little of it, blaming nostalgia and improper diet. Even when a number of their own group began to suffer "dizzy spells" and an unpleasant burning sensation of the skin there was no suspicion of anything wrong. Gibbs had been very careless.

The five children of the little community played in the woods back of the houses; the wives doctored and fed the hens; and the husbands came home every night, sympathetic but not particularly worried over such reports as "Mary is not feeling well this evening. I have sent her to bed," or "Papa, Mama's got a headache. Let's us get supper!"

When Sunday came, however, and they all stayed home, they began to notice things. Those hens were hopeless! They couldn't even stand up, now; but lay around clucking feebly and shedding their feathers, which were of a strange, muddy appearance and very sparse. The grass around the houses had a peculiar greyish look which they had never observed before. And someone was sick in every house . . .

CHAPTER V

Revolt!

ON Monday morning the men did not go to work; but held a consultation, and quickly agreed that something was very wrong. There could be no doubt about it, now. The grass was black, not grey—all around; and the woods in back of the houses, in the direction of the burned cottage, presented an unnatural sight. Trunks and branches, shorn of their leaves, stood inky dark against the sky. Most of the small bushes and underbrush had

disappeared, and an ebon carpet of dust covered the ground. The men suddenly remembered O'Brien's cottage and the strange happenings there. They became frightened.

And that was the very morning of the arrival of Dan Hogan's advance guard of policemen . . .

"There will have to be a quarantine."

Herbert Jules and Dan Hogan accepted Gibbs' statement with slow nods; and for a time there was silence in Hogan's office, while the three men remained occupied with their own thoughts.

Finally, Jules asked: "What is the penalty for breaking quarantine?"

Hogan's answer came quickly, as if he had been expecting the question. "It's a misdemeanor. Fine or imprisonment."

Little Gibbs looked distressed. "It doesn't seem to fit—does it?"

Hogan amplified the thought. "A fine doesn't mean much to a man whose life is at stake—along with the lives of his wife and children. As for imprisonment: how're you going to imprison people you can't go near?" He stood up, and began pacing about angrily. "As it stands now, they could walk out of that place, and we couldn't lift a finger!"

"Do you think they will?" ventured Gibbs.

Hogan stopped near Gibbs. "Well—put yourself in their place! If your wife was sick—suffering, and you phoned a doctor; and there was a line of cops all around your house that wouldn't let the doctor in, tellin' him it was sure death—would you just sit there, waiting to die?"

Gibbs buried his face in his hands.

"Dan," said Herbert Jules tensely, "if I could get out—if I could only get to my laboratory, there is a chance I might be able to do something for them . . ."

In two strides Hogan was at his desk, giving a number into the phone. A short pause, and then: "Hello—Matthews? This is Dan Hogan . . . Yes . . . Can you step down to my office a minute? . . . Yes, of course it's important! . . . O. K." He hung up. "Best to see him first," he explained.

Peyton Matthews was a spare young man with a high, narrow head, dark complexion, and sleek black hair. He had close-set, black eyes; a long, hooked nose; and a small, tight, straight-lipped mouth. His face was habitually expressionless; and he affected a thin, meaningless smile, with which he now favored the company as he stood in the doorway.

"The prisoner, it would seem, spends most of his time in this office," he remarked in an even, colorless tone.

Jules flushed slightly, and Hogan growled, "Sit down, Matthews."

The District Attorney strolled to a chair, and seated himself comfortably, crossing one leg over the other.

Hogan stood in the middle of the room, legs wide apart, hands deep in trousers pockets; and looked at the other. "Matthews, we want to fix it so Dr. Jules can go home."

Peyton Matthews raised his eyebrows. "Oh?"

Herbert Jules leaned forward in his chair, and spoke very earnestly. "Mr. Matthews, I hope you will help me. I would not ask favors for myself, but—"

Jules paused for a moment, as if searching for words. The lines of care were deep, in his forehead and about his eyes. When he continued, his voice was very low.

"Out on Manhasset Neck, twelve people are dying slowly. They are being killed by a mysterious force—a force new to this world—a thing no one can perceive or understand . . .

"I want to study that force. If I could work in my laboratory I might be able to discover some means of combatting it. The chance is very small, I will admit; but it is unthinkable that we should not try everything possible to save them!"

Peyton Matthews was not looking at Jules, but at Gibbs; and now he said, "I hear you have quarantined those people, Gibbs."

Jules held his tense position. Hogan frowned thunderously.

"Why, yes!" said Gibbs in surprise.

"And I am told, also, that you are refusing them medical attention," pursued Matthews calmly.

"Well you see, Mr. Matthews," said Gibbs earnestly, "there's nothing a doctor can do. He would just be committing suicide by going in there, because we couldn't let him out again. He would spread the—the rays . . ."

MATTHEWS was staring at Gibbs fixedly. "It's a queer sort of quarantine, and I doubt very much if it is legal," he said coldly. "I don't like to tell another man his business; but you know, Gibbs, there's been a good deal of criticism of your actions lately. In fact," —here Matthews turned from the miserable Gibbs, and included the others in his gaze—"a number of strange things have been done in the name of these—ah, 'rays' that Dr. Jules seems so fond of."

"Now look here—" began Hogan, but the other had not finished.

"One minute!" he said coolly. "The quarantine Dr. Gibbs has seen fit to declare is a brutal bluff. Those people cannot legally be confined to their homes without medical attention; and they should be told as much. If they are really sick, the course you are taking is no less than murderous . . ."

"Well, if holding them in there is murder, letting 'em out would be massacre!" exploded Dan Hogan. He was very angry.

"Speaking of massacres," said Peyton Matthews calmly, "I understand you have petitioned the Governor to establish martial law in this county."

Hogan was taken aback at this unsuspected knowledge of the other, but he spoke defiantly: "Well, what of it?"

"Nothing—except that I think I see your motive. In case your bluff fails, you would like to be able to enforce your so-called 'quarantine' with firearms. Is that it?"

Before Hogan could find an answer, there came an interruption.

"Mr. Matthews!"

All turned towards Jules, the sharpness of his tone impelling their attention. He was sitting back in his chair, apparently comfortable and relaxed; but his brows were lowered, his jaw hard, and his eyes very steady as he gazed at the District Attorney.

"Mr. Matthews, you appear to be unable to grasp the situation in any of its essentials. You seem incapable of understanding men with simple, honest motives. I am going to try to make the thing clear to you. I hope you have something approaching average intelligence." For a moment, Jules paused. Peyton Matthews flushed

darkly, but said nothing. Noiselessly, Dan Hogan found a chair, and sat down on its very edge, grinning. Gibbs gaped.

"I trust, to begin with," went on Jules slowly, "that you do not really believe that these men, whom you have been criticizing so freely, are brutally or murderously inclined . . . I think it is safe to assume that the quality of human kindness is as highly developed in them as in yourself. All of us, as civilized beings, set a high value on human life. But emergencies arise . . .

"Suppose you were given your choice: whether one man should die—or a thousand. Would it be difficult?

"I say that emergencies arise. War is a common example. In warfare, life is held very cheaply; because the welfare of the individual is weighed against that of the group—and suffers in the balance. But war is man's own folly, and not the sort of emergency I am talking about.

"It sometimes happens, however, that such a choice as I have mentioned is forced upon us from outside. Then it must be decided: the one?—or the thousand? The difficulty lies not in the choosing but in the apprehension of the choice; that is, in the grasp of the situation. Fools kill the thousand in futile attempts to save the doomed one.

"Near Port Washington are twelve people who carry in their bodies a destructive agent so virulent as to be a menace to the whole of mankind. Since no one understands it, it cannot be fought; it must be confined—isolated; and if that fails—there will follow a disaster such as the civilized world has never known!

"To prevent that, I killed a man. He had no chance for life—irrespective of my interference; the infection he carried doomed him to death. But left to his own devices he would have taken many others with him . . .

"And to prevent that, Hogan here should have authority to kill those twelve, if there is no other way to stop them from spreading the destruction that they carry."

When Jules finished, Matthews spoke almost immediately. "It strikes me, Jules, that you are a little too vague about this thing that makes you do and advocate such violent deeds. You call it a 'destructive agent' or a 'force' or an 'infection.' You admit you don't understand it—know nothing about it. And yet you are willing to kill people on the strength of it. That is unreasonable."

He stood up, glancing at his watch. "Now I must go. I have no more time to spare." In the doorway he turned. "As to your being released, Jules; that is impossible, of course. Now you are a confessed murderer; and it would be my duty to make every effort to prevent such a mistake being made."

WITH a slight nod to the others, Peyton Matthews was gone.

Jules was, therefore, returned to his cell; and he saw no one until the following evening, when he was again summoned to Dan Hogan's office.

The big man was hardly recognizable. He sat at his desk, his head supported in his cupped palms, his shoulders bowed forward, his body slumped down in his chair. When he looked up, Jules was shocked by his haggard face.

"I hope to God I never spend another day like this one!" he groaned. "Lord knows what's going to happen now!"

"What has happened, Dan?"

"I may as well tell you from the beginning . . .

"About noon, I went out to Port Washington. I'd been waiting around all morning to get word from the Governor; but it didn't come, and I decided to go out there anyway. I arranged to get the news by phone. There's a police booth near the place.

"The four houses where those people live are in a sort of a little valley, set close together, with a road leading down. It's an awful looking place. It's black—just black. The fields are black, where the grass used to be; and the woods behind are black—what's left of them. There isn't much left, though. The trunks are about all. All afternoon I saw branches falling off. You can see right through to where O'Brien's cottage was.

"I checked up on the guard. We got a line of men all the way around—almost two hundred. About a quarter of a mile away the steamshovels are working.

"You could see some of the people down there, outside the houses—a few men, and once in a while a woman. They were just sort of walking around looking at us, not doing anything.

"Gibbs was there—been there all day. He said they hadn't been giving much trouble; but he looked all broken up when he said it, or even when he mentioned them, or just looked down there. He said there'd been three doctors in the morning—doctors that the people had phoned; but he'd managed to show 'em it wasn't any use, and sent 'em away. They were stubborn though, he said.

"About an hour after I got there, a woman started screaming—in one of the houses. It was awful. She didn't stop at all; just screamed and cried, and screamed again. I could hardly stand it, and Gibbs was worse. He kept sort of wincing, all the time—every time he heard it.

"Pretty soon, then, one of the men came running towards us. When he was about ten feet away I had to tell him to stop; and he just stood there, and looked at me, and said, 'Please, sir, can't we have a doctor?'

"Well, Jules, maybe you can imagine a little bit how I felt. I didn't know what to say; but there was one word I just couldn't say, and that was 'No.' I said, 'In a while. You will have to be patient.'

"I think he knew I was lying, because he screamed out at me: 'In a while—damn you! Don't you know my wife is suffering? She's dying!' And then he cursed me and called me every name he could think of; and I just stood there, until he quit and began sobbing. He was sick, too; you could see that. He shook all the time, and he had black marks all over his hands and face.

"In a little while he quieted down; and then—all of a sudden—he looked straight at me, and began walking forward!

"It was a queer feeling, Jules—seeing him coming closer like that, with his black face, and eyes staring at me. First I ordered the man back, and then I backed away from him, too. When he saw that, he stopped; and I could see he was thinking. Then he turned around, and went down towards the house. But in less than fifteen minutes he was back again with three more men. And I knew they meant to come through. I told them to stop; but the man who'd been up before said that they were going after a doctor, and to try and stop them. They

looked determined and desperate, and I could tell by their eyes how they hated us.

"Well there wasn't anything for me to do. You can't stop people if you can't shoot 'em and can't get near 'em. I couldn't ask my men to commit suicide, so I had to tell 'em to back up. So there I was, letting them go, and couldn't think of anything to do about it.

"Well, Gibbs showed me. He'd been standing beside me all the time I'd been there, not saying a word. Now—all of a sudden—he said, 'Wait! I'm a doctor. I'll go with you,' and he went over to his car and got his medicine kit. I caught him on the way back, and told him he was crazy. He just said, 'I can't stand it, Dan—I can't stand it!' and went towards the four men who were watching him sort of uncertain-like. I grabbed his sleeve.

"He turned around, and his face was set hard as a rock. He said, 'You can't stop me, Dan.' Then he smiled. 'I happen to know that—you see,' he said.

"So he went down the hill with the four men and into one of the houses. Pretty soon the woman stopped screaming.

"Well, a couple of hours went by, and every minute I was expecting the word from Albany, but it didn't come. Everything was quiet down around the houses, though; and I began to get a bit less worried. It's funny, but I couldn't seem to think much about Gibbs. Then—all of a sudden—they all began to pile out of the houses, some being carried. I couldn't figure it out at all; but I've found out since what happened. It was Matthews. He called them up, and told them there wasn't any reason why they couldn't go to a hospital for proper medical attention, if they needed it.

"I began to see that the game was up. There were three cars on the road outside the houses, and they were piling into those. I began to wonder about Gibbs, and all of a sudden I saw him. He was coming out of one of the houses, and he had a gun in his hand. I don't know where he got it.

"When the people saw him, they stayed where they were, not moving. Gibbs stayed still, too; and for a long time they all looked just like statues, without a single movement. I knew Gibbs was hoping I would get the word from Albany; and I prayed for it, too, like I have never prayed for anything in my life. But it didn't come.

"Then one of the men jumped at Gibbs, and grabbed him. He didn't even shoot. They all piled on him.

"Pretty soon the three cars came barging up the hill and past us. I sent men to follow them. I guess they went to a hospital. I oughta get a report any minute now.

"It was getting dark by that time, especially in that black hole of a valley. A drearier place I have never known. I could just barely see Gibbs, lying on the road down there. He looked awfully small and lonely. Somehow I didn't seem to realize until then that he wasn't coming out again . . ."

CHAPTER VI

Chaos!

HOGAN fell silent. On Jules' face distress and horror contended. Neither spoke for some time. Then Hogan, who sat with bowed head, clenching and unclenching his fists, burst out passionately: "It wouldn't seem so tough if he'd done any *good!* But no. Those damn' fools in Albany don't *do* anything; they don't pay any attention . . . I tell you, Jules, they're just as responsible for little Gibbs' death as if they'd choked him with their hands!"

Jules nodded. "And yet, Dan," he said sadly, "that is the way it always happens. Whenever some sudden catastrophe—some new and unexampled menace—strikes at mankind, official action is too slow—and it is some individual that must bear the brunt of the attack. No *system* can act quickly in an emergency—because systems are built to deal with ordinary situations. They are sluggish; they cannot change their nature overnight. And so, in times of new and sudden danger, it is brave, unselfish men like Gibbs who throw away their lives to save their fellows . . ."

"But it didn't do any *good!*" groaned Hogan.

"I think you're wrong," said Jules quickly. "True, he failed in his immediate purpose; but his martyrdom is certain to have a tremendous effect on public opinion, and should go a long way towards compelling official action. Now the thing is out of control. Now, if ever, action must be taken. And I know what I am going to do. If it is humanly possible, I am going to find out what these rays *are*, and how they may be fought . . . But first I must get free."

Hogan shook his head disconsolately. "I don't see how it's possible, Jules. I've done everything I can, and—"

"I have a plan," Herbert Jules interrupted, "and it will need your help. It should work, I think . . ."

And on the following morning they stood before Judge Wilkerson in the County Court—Jules, Hogan, Jules' lawyer—a large, florid, white-haired man, and Peyton Matthews. Hogan and Matthews stood a little bit to one side. Hogan shifted nervously from one foot to the other—obviously unhappy. He was far from approving Jules' plan, which the latter had outlined to him on the previous night. Vigorously he had objected that no cause could be worth such a sacrifice; but Jules, by a single reference to the death of Gibbs, had managed to make that objection appear ridiculous. Hogan had been forced reluctantly to do his part. He had held a long conversation with Judge Wilkerson, and the present special hearing was the result.

Nor was Peyton Matthews in a comfortable frame of mind. He was puzzled; not knowing what to expect. This move had taken him entirely by surprise; and to be taken by surprise annoyed Peyton Matthews extremely.

Judge Wilkerson was speaking, formally.

"Herbert Jules, on the fifth of this month, in this Court, before me, you were charged with Second Degree Murder in the killing of Patrick O'Brien. At that time you entered a plea of Not Guilty. I am given to understand that now you wish to alter that plea. Is that true?"

"That is true," agreed Jules calmly.

Matthews looked hard at him, a slight puzzled frown creasing his forehead.

"I wish to plead Guilty to the charge," said Jules. Matthews was surprised into betraying real astonishment on his usually impassive features. He started slightly, and stared hard at the Judge, who was again speaking.

Hogan cleared his throat, and leaned forward toward the Judge.

"And I, your honor, would like to take the prisoner into my personal custody, on sufficient bail of course."

The Judge nodded and addressed Jules. "You will be allowed to go free in the custody of Sheriff Hogan, when you have posted the sum of fifty thousand dollars with this Court."

From an inner pocket Jules' lawyer took a package of bills, and laid them on the bench. Jules bowed to the Judge, and turned away. Expelling his breath in a long and audible sigh, Hogan joined him.

"YOUR Honor!" All turned to see Peyton Matthews standing before the bench, one arm outstretched, his face flushed. His original suspicion, which had been changed to satisfaction by the Judge's verdict now returned in full force, together with considerable indignation.

"Your Honor, I protest that this is irregular! There is no reason why bail should be admitted. In a case so serious, bail should not be—"

"Objection overruled," said the Judge coldly.

Jules' car was waiting. He went directly to his home, a large mansion overlooking Long Island Sound in the residential village of King's Point, three miles north of Great Neck. There, from his great laboratory, he secured a small but massive lead box, of the type used to store radium solutions. Equipped also with a pair of fire tongs and still accompanied by Hogan, he returned to Great Neck. The Dixon grounds were now no more than a great black disc, an eighth of a mile in diameter, with a circumference of cleared earth, outside of which was posted a constant guard of policemen. Running at top speed, Jules crossed the sooty ground to the tree, under which lay the little black lump that had been a bird. This he deposited in his box, using the tongs; and then returned with all possible speed to safety.

Back in his laboratory, he immediately began work—using electroscopes, phosphorescent plates, and various saturated solutions, in an attempt to determine the nature of the destructive force which he knew emanated from the infected material. He realized that he was in great personal danger; and used heavy lead shields, arranging them in such a way that there was never any direct line between a part of his body and the thing he was studying. He knew of no other precaution to take; but this one alone made his operations discouragingly difficult and cumbersome.

The newspaper reports of Jules' temporary release aroused widely varying reactions because of the many divergent attitudes and opinions which the public now held towards the matter of the rays. Gibbs' and Hogan's quarantine had earned them almost universal condemnation at its inception; but, at the news of its failure, popular opinion did an about-face, and they were blamed for laxity. As Jules had anticipated, Gibbs' martyrdom was instrumental in convincing many that the matter really was serious; and the fact that the 'ray victims,' as they now were called, were at large caused a faint but very definite uneasiness.

The fortunes of these 'ray victims,' therefore, became a subject for headlines and lead articles. The attention of the public was focused upon them.

They had all gone together to a large hospital in Jamaica, where the hospital authorities gave them a special ward to themselves. It was planned that their nurses and doctors should—as it was expressed in a statement given out to the reporters who besieged the place—"take stringent antiseptic precautions."

These precautions, however, proved to be quite useless. Within two days one of the nurses was taken sick; and the rest walked out in a body, refusing to have anything more to do with the case. With the inquisitive and efficient newspaper reporters everpresent, it was impossible for the hospital authorities to keep this event secret, and it was common property almost as soon as it happened. No new nurses could be found who would even so much as enter the "special ward." "JAMAICA HOSPITAL DEMORALIZED" was the way one headline-writer put it. It was not long before the majority of patients in the institution was hysterically demanding to be removed.

Within a week after the admission of the ray victims, there was not another living soul in the great building, with the exception of the unfortunate doctor who had been given charge of the case. He remained; and his report on the ray cases, which he faithfully kept until the end, was syndicated throughout the country and read by millions. It was a horrible and fascinating document, not only because of the repellent nature of the afflictions described, but also because each reader knew that the doctor had been dying of those afflictions, even as he wrote.

In his first observations of the patients he had noticed, beside the black discoloration of the skin, an extremely nervous condition. In spite of his sedative treatments, this nervous excitability had hourly increased, and was accompanied by violent twitching of limbs and all muscles—apparently involuntary. Complete loss of body control followed—and also loss of reason. It was necessary that the patients be strapped to their beds.

As to the surface discolorations, the skin steadily rotted away, as well as the flesh beneath; and prominent features, such as nose and ear, often completely disappeared.

It was difficult to determine, the doctor explained, exactly when death occurred in any individual case; because the effect of the rays seemed to be to completely disorganize the system. Heart stoppage occurred at varying stages in the progress of the disorganization. The heart of one of the patients had stopped, for instance, on the second day of treatment.

In discussing his own symptoms he complained of constant burning pain throughout the body, and, later, incapacity to think clearly or control his actions. The last few pages of the report were unintelligible.

JULES had now reached a point in his investigation where he could have explained to the doctor these nervous disorders which puzzled him so much. The rays, by their nature, penetrated the body easily, attacking all living tissue in their path; and the most delicate and sensitive organisms naturally suffered first.

New and alarming news came quickly after the evacuation of the hospital. The patients who had occupied rooms adjoining the "special ward," as well as those directly above and below it, were found to be suffering from the rays in the places to which they had been removed. The nurses who had worked in the ward were now, also,

ray victims. All these facts were set forth in the public prints.

The newspapers, by this time, carried ray news almost exclusively. The previous public scorn and disbelief concerning them was now entirely gone. There were too many actual instances of the strange new ailment to leave anyone in doubt as to its existence. And its peculiar characteristics, now common property, were such as to engender awe and fear to the hearts of many. People spoke together in hushed voices of these things that passed easily through walls, that rotted men's bodies, and drove them mad.

The newspaper published as complete lists as possible of all places where the ray infection was known to be, and not a few of the nearby residents made immediate preparations for moving; but the papers warned, at the same time, that they could not guarantee the completeness of these lists, and that there were probably many persons carrying the infection about on their bodies. This did not add to the general peace of mind. Official action was now vehemently demanded in all quarters.

And, ten days after Sheriff Dan Hogan had originally begged for it, the Governor of the State proclaimed martial law, giving as his reasons the same ones that Hogan had urged: that the situation was "extraordinary," and that persons infected with the rays, who were a menace to the public health, could not be constrained by ordinary means. The Governor decreed that "all persons found to be suffering from the disease called 'rays' must remain in their homes, and all unaffected members of household must be immediately removed."

The difficulty, of course, was to determine who was, and who was not, "suffering from the disease called rays." Black marks and nervous disorders were the only symptoms known. Jules—when consulted by officials of the United States Public Health Service, which had been drafted to aid the New York medical forces—said that during the first two days of infection the rays gave no sign of their presence at all. This was discouraging. The health authorities prepared to do the best they could; but realized that a great many of their decisions must, necessarily, be quite arbitrary.

This fact was dramatically impressed upon the public mind in the first few days of the new regime. Soldiers patrolled the streets, brought to aid the overworked police force, and their duty was to enforce the decisions of the health authorities. On the first day, four persons were killed. Refusal to obey the health officers meant instant death. These officers were doing their best; but they were dealing with a thing they did not understand, and their task was one of tremendous difficulty. Satisfactory diagnosis in all cases was impossible. They were forced to act on suspicion alone, more often than otherwise. Black markings, nervous disorders, recent association with a ray victim: any one of these was enough to condemn a person to imprisonment—or death if he disobeyed. The families of ray victims were imprisoned with them, out of hand.

The western end of Long Island quickly became an extremely unpleasant place in which to live; and, within three days after the martial law declaration, the bridges, ferries, and railroad trains leading into Manhattan were jammed to capacity with refugees.

It was inevitable that some infected people should escape in this movement. The rays broke out in a Manhattan apartment house. The Manhattan authorities took immediate and drastic action. The house was vacated, but the occupants of the apartments adjoining that of the ray victims were forced to remain. The place was surrounded by a constant and heavy guard. The injustice to people imprisoned in that deadly place, in this case and in others which quickly followed, aroused a storm of protest; and a wave of panic fear swept the district.

The stream of fleeing Long Islanders began to appear like a stream of death—an infinite menace, which must be stopped. Hysterical mobs blocked the East River bridges, and stormed the railroad stations refusing to let the Long Island passengers disembark. In blaring front-page editorials the newspapers, not only those of New York but throughout the country, denounced the exodus of Long Islanders as certain to spread the rays—a danger that must be averted at all costs.

CHAPTER VII

The Few or The Many

THE blockade of Long Island, begun by the Manhattan mobs, was officially proclaimed a day later by the Secretary of War as his first official act after having been appointed by the President to control the ray situation. Immediately, a tremendous cry went up from the Island. In populous Brooklyn, Queensborough, and Nassau, panic-stricken crowds milled in the streets. The people gathered in great public meetings to denounce the ruling as unjust and murderous. Telegrams of frantic protest were sent by the thousands to the President of the nation and the Governor of the state.

But Jay Pangborn, Secretary of War, held his ground firmly.

"Of course it's unjust!" he exclaimed violently to Herbert Jules. "But what can I do?"

The two were sitting on the front porch of Jules' home, facing the broad lawn that stretched down, gradually sloping, to the waters of the Sound a quarter of a mile away. This lawn was the scene of great activity. A small army of workmen was busy with mixers and barrows, laying large, square concrete foundations; and a number of cranes were at work constructing a huge derrick.

"We've got to draw a line somewhere," added Pangborn. He was a large man, past middle age, with iron-grey hair and bushy eyebrows. His hard face was deeply lined and weather-beaten in appearance; his voice was harsh and unmusical.

"If we let these rays spread, we're beaten," he went on. "That's our only way to fight 'em—to cut 'em off. If we let people out—we let the rays out; because we can't tell if the people have got the rays or not. Eh?"

Jules nodded. He looked very tired. For many nights and days he had worked almost constantly in his laboratory, aided by a corps of assistants collected from far and wide. Now, when he spoke, his tone was faintly bitter.

"Exactly. That is the truth which should have been recognized long before this. There are times when it is necessary to sacrifice the rights of the few for the good of the many. This is one of them . . . But it is going to be difficult. Because the 'few' in the present case amount to something like two million . . ."

"Sure!" said Pangborn, "but that's few compared to

the eight million right next door—and the hundred and fifty million in the country. And it's damned few compared to the population of the world! You might as well say that; because if these rays aren't stopped, it's a cinch they're going to keep going, and if they keep going—well, what's left of the world?"

Jules did not feel it necessary to answer; and in a moment the other was again speaking.

"But what I'm here for is to find out how you are getting along." He waved his arm towards the lawn. "Looks like something's going on. Maybe you can do something—eh?"

"Yes," said Jules slowly, "I think I have found a way to combat the rays—but it will be sometime before I am ready. . ."

Pangborn was excited. "What! . . . How? What are these rays, anyway?"

Jules smiled faintly. "I am afraid it is not easily explained."

"Well, can't you give me some idea? I've got to understand this job; you can't fight a war you know nothing about . . . And besides, I want to know just how much I can count on you."

"All right," agreed Jules. "I will explain in outline what we have done here . . .

"In the first place, you must understand that these things we call the rays (and a good name it has proved to be!) strike at the very root and foundation of our earthly life—the colloids.

"Only in late years have chemists begun to realize how closely the mysterious colloid state is bound up with the phenomenon of life. The fundamental life-cell is simply matter in the colloid state; that is, it consists of atoms held in magnetic suspension by the electrical charges which they carry. It is only necessary to alter these electric charges to upset the magnetic structure of the cell—its *valence*—and to completely destroy it—as far as its 'life' is concerned. It collapses upon itself, and nothing remains but dead matter.

"And these 'rays,' in short, have the power of doing that very thing. It would be necessary to go deeply into the quantum theory to explain why; but the fact is, that their peculiar rate of vibration makes it possible for them to project their energy into the living cell, thus destroying it. They are energy waves of extremely high velocity. The exact figure would mean nothing to you, but it is the range between the gamma rays of radium and the cosmic rays.

"The cell in its collapse emits just the right amount of energy to produce the same kind of rays which caused its destruction. Thus it is a vicious circle. The new rays shoot out, easily penetrating everything in their path until they encounter other cells, which they discharge—and so the process goes on, as long as there are living cells on which the rays may feed.

"It is these rays, therefore, that we must deal with. And I have worked on the principle that the only way to fight a ray is with a ray.

"NOW, for a moment we must talk about wave motion . . . . When two waves of the same frequency meet, they interfere with each other. You are familiar with that fact in radio broadcasting . . . . Waves of different frequencies pass through each other unmolested and unchanged; but waves of identical length are mutually affected at meeting. The energy of each is changed. It may be increased, or it may be lowered—depending on the angle of incidence of their meeting and the degree of synchronization between them; but the important point is that *their energy is always changed.*

"That is what we want. If we can change the peculiar energy of the rays, we can rob them of their power to affect the cells . . . . If artificial rays are produced, and are caused to continue for even as short a time as one tenth of a second, they will destroy the carrying power of the rays. They will break the vicious circle.

"Rays of such high frequency have never been produced by man. To produce them, and to project them over a large area—even for a fraction of a second, will require an electrical potential in the neighborhood of fifty million volts . . . . Two years ago, that would have seemed an impossible dream.

"But now it does not appear so impossible. Recently the Princeton scientist Von Doorn has developed a new type of generator, which appears to have no limit to its capacity. It is only necessary to build one large enough.

"I have already obtained the assistance of Von Doorn, and he is now at the New Jersey Shipyards supervising the construction of the huge metal spheres necessary to the machine. Every effort is being made to speed the work, and they should be finished in ten days more. Two days will be needed to bring them here and erect them on their pedestals; and approximately four additional days will be required to charge them to the necessary potential. Then I shall be ready for my attempt."

"You mean you're going to try to sort of broadcast a cure?" said Jay Pangborn.

"Yes. You might put it that way," smiled Jules.

"Hum!" Pangborn grunted; and then went on, with the air of one turning the conversation back into practical channels, "Well, I wish you luck. But of course we can't depend on anything like that. Before we get through here, we're going to have a real war on our hands. I can see that far ahead. And that's what I've got to get ready for . . . "

He stood up. "Now I'll have to be going. There's three train-loads of troops getting into New York this afternoon."

The War Secretary's departure coincided with the arrival of Dan Hogan. One of the latter's many duties now was the guarding of the Jules estate, and he paid daily visits.

"There goes a man who doesn't think much of my ideas," remarked Jules, after greetings had been exchanged.

"Why—Pangborn? . . . Well," said Hogan sarcastically, "maybe Peyton Matthews can give him some better ones . . . "

"Matthews?" repeated Jules in surprise.

"Yeah. Didn't you know? . . . Matthews is a man of parts. He's a Colonel in the National Guard. He's one of Pangborn's right-hand advisory men in this fight."

Jules changed the subject. "Do you think the rays are spreading very fast, Dan?" he asked, with a shade of anxiety in his voice.

"Lord yes!" Hogan threw himself into a chair. "It's awful! I tell you, Jules—fear makes something else out of men. They aren't men any longer. They don't think;

they can't reason. They just swarm together, and scream and yell and fight. There's no controlling them—not even at the point of guns . . .

"If people would listen to reason, we might be able to slow up these rays a bit; but they won't. And you know, Jules, that in a place like Brooklyn it's impossible to handle that swarm of people, no matter how many guns you've got, if they don't want to be handled. The soldiers are scared of them—and the cops too. And you can't blame 'em.

"And in a way you can't blame the people . . . I know how they feel—trapped. Trapped on this Island along with a thing that will kill them—a thing they can't see or avoid, that'll drive them mad if it catches them—and then kill them . . . And soldiers all around, that have a right to shoot them . . .

"It probably seems to them like all the reason and justice has gone out of the world. You can't blame them if they try to meet force with force—and that's what they're going to be doing—more and more all the time. Each one of them has got just one desire—to get in a safe place.

"Places like this estate are going to be hard to guard . . .

"There are others," he explained, in reply to Jules' questioning look. "A few towns and smaller communities got far enough ahead of the game to organize defenses of their own. But they're having a hard time. Everybody wants to be in places like that; and they've had regular pitched battles already . . .

"A MAN was caught trying to sneak into your place this morning. Pretty soon they won't be sneaking—they'll be fighting!"

"It seems brutal to keep them out," said Jules sadly.

"Good God, man," growled Hogan, "*you're* their only chance of being saved! If they polish you off—then where'll they be?"

Hogan's description of the Long Island situation was not exaggerated. If it erred at all, it was on the side of understatement. For no words can paint the lurid horrors of a panic-stricken mob. Under the scourge of terror Man's civilized veneer is slashed off; his long-quiet primal emotions are aroused; and Hate becomes his guide.

Then he runs in packs; then he slays unreasoningly, and joys in the killing.

As the days passed—days of futile struggling and nights of black horror—the people of Long Island came to hate those that imprisoned them—the men who stood with guns and barred their way to safety.

At first their attempts to escape had been sporadic and disorganized. A few had tried to reach Manhattan by climbing the framework of the bridges—only to be shot into the river. Families had set out in boats—only to be ordered back. Others had tried the railroad tunnels, and had met with failure—as did the occasional swimmers.

But soon they were coming in groups, which, although always repulsed, grew daily larger; until one morning, a fortnight after the blockade had been established, a veritable army advanced upon the East River defenses. It was poorly organized; but it was large and determined, and fairly well armed. It stormed the bridges; it crowded into countless boats; it even swam.

At first the soldiers held their ground. But the attackers outnumbered them thirty to one. They also had the added advantage that they were feared for the deadly menace that they carried. The ravages of the rays were only too apparent among them. Many showed black-splotched skin—noses and ears that were mere stumps . . . And they fought with the frenzied recklessness of despair.

The soldiers were forced back. Reinforcements were rushed to the scene. Throughout the nation, millions waited anxiously for news of the battle.

Late that afternoon, a swift power launch swung in to the dock of the Jules estate; and three men crossed the lawn, gaping as they passed, at a huge object that stood in its center.

It was the generator. A week before, a tug had towed the two great metal balls into the bay; and now they rested on their insulating pedestals, twenty feet above the ground. They were enormous—ten yards in diameter; and their surfaces were smooth and polished. From slits in their sides many broad silk belts looped to motors on the ground. For three days now, the belts had been turning steadily, charging the great spheres.

The guard around the estate had been doubled. True to Hogan's prediction, the place had been besieged by hordes of the frenzied victims of the rays. To the South and West the woods were black and bare; and the dark, lifeless area stretched right up to the barrier of cleared earth that ran across the fields back of the house.

Dan Hogan now devoted his entire time to the guarding of the estate; and he was standing on the porch with Jules when the visitors arrived. They were Jay Pangborn, Peyton Matthews, and an orderly. Jay Pangborn came to business immediately.

"Dr. Jules, you've got to clear out of here, right away—all of you!"

"That is impossible!" Jules was astonished.

"Can't be helped," snapped Pangborn. "In the first place, I'm withdrawing all troops from the Island tonight. We've lost too many men here already; and, besides, we need every man we've got, outside . . . In the second place, we're going to attack tonight from the air, with bombs . . . "

"Bombs?" exclaimed Jules, horrified.

"Yes. This is war, and we've got to use war methods. We've been getting the worst of it all day, and we've got to use every weapon we have."

"But—" began Jules, when Peyton Matthews interrupted . . .

"You don't seem to understand, Jules, that these madmen almost broke through our lines today."

Jules' face showed deep distress. "But can't you hold them until morning—without using bombs? My generator should be fully charged by then . . . "

"Your generator . . . ?" said Peyton Matthews in a surprised tone. "Come Jules, be serious! This is a serious matter." He turned to Pangborn, and spoke deferentially. "Surely, sir, any needless delay would be a terrible risk now."

"Yes, Jules," said Jay Pangborn crisply. "I don't like to wound you; but I've talked to several good men about your scheme, and they didn't seem to think there was anything in it . . . This is war," he repeated, "and we've got to use war methods . . . Now, get ready, and—"

"I SHALL remain here," said Jules quietly.

"Eh? . . . Why man, you're a fool! Your guard will be taken . . . "

"Very well. My household and my workmen will also go with you, they are no longer needed."

Pangborn stared hard at Jules for a moment. Then: "All right! They've got to hurry. I'll give 'em ten minutes . . . You may do as you like, I suppose."

The guard of soldiers was marched out of the fields in back of the house and down to the dock. Another boat had arrived. The servants came hurriedly out of the house; and within the given time they were all climbing into the boats. Jules still stood on the steps, with Hogan beside him. He turned.

"Well, Dan. Hadn't you better—"

"I'm not going," said Hogan.

"But there's nothing for you to do here. You—"

"I'm not going."

Down on the dock, Peyton Matthews turned and shouted. "Hey you! Get a move on!"

"I'm not going!" said Dan Hogan for the third and last time.

The sun was setting, and the metal balls of the generator reflected its light redly. About thirty feet apart, they rested in the air, huge and motionless. The long silk belts rustled softly as they turned.

"We may as well go indoors," said Jules.

They seated themselves before a large window overlooking the lawn. The thunder of artillery reverberated constantly in their ears. And presently they began to hear another sound—a babbling and shouting of voices.

"It didn't take them long to find out that the guard was gone," said Hogan. "The rays have caught up with us at last!"

After a time Jules said amusingly, "You show a tremendous faith in my theories, Dan." He sat low in his chair, his head thrown back, his eyelids drooping. Many sleepless nights and the mental strain under which he labored had brought him near to complete exhaustion.

Hogan looked at him sidewise and then at the generator. "It looks as if it ought to work!" he grinned.

"Oh, by the way!" exclaimed Jules suddenly, sitting erect. "In case I should for any reason be incapacitated, you ought to know what to do . . .

"When the spheres are completely charged you will notice a faint glow on the surface . . . Just to the west of the house there is a short concrete and lead wall. I suppose you have seen it. Behind it is an electric switch. That switch operates the discharging apparatus . . . " He gestured towards the generator.

Held in a framework which rested on the ground were two large metal cones, pointing toward each other. Between the points, also held in the framework, was a block of dull metal.

"Keep down behind the wall. When you throw the switch, that apparatus rises until the flat backs of the cones are in contact with the charged spheres. The stored electricity in the spheres is discharged through the points of the cones. The block of metal you see between them is tungsten. It is destroyed by the hurtling electrons of the discharge—practically annihilated; and in its annihilation the rays I am after will be produced. They will be broadcast far and wide. If my calculations are correct, they should be effective at a range of a hundred miles. The electrical storm here, near the generator, will be terrific; and I must warn you that our position is dangerous. What the effect will be on people farther away, I cannot tell; but it should not be more than a nerve shock. I—"

BOOM! . . . Throughout the house, the windows rattled loudly. The air reverberated in waves of pressure. The very ground shook. Both men leaped to their feet.

"Bombs!" cried Hogan. "They've started!"

Outside, now, they heard screams and startled cries from all sides. Night had fallen; but on the lawn they could make out dark forms and shadows swirling about.

The thunder of artillery from the East River had now increased tenfold. Above the constant volley of shots the crashes of heavier explosives sounded faster and ever faster.

"My God! Dan, it's a massacre," screamed Jules. "They are killing the poor devils like flies!"

BOOM! . . . The men were hurled against the window frame. A flash illuminated the lawn, and they saw a multitude of men and women reeling confusedly about, falling, struggling and trampling one another. In the air above great motors drummed and roared. There came another crash—much nearer; and the house shook on its foundations.

"The cellar!" shouted Hogan. "Come on . . . !"

IN a moment they were in the hall. On the outer door they heard the pounding of many fists. Somewhere at the back of the house a window broke.

"Let them in," said Jules.

"No" snapped Hogan.

Jules stopped. "Do you want to see them blown to pieces? . . . The cellar is large. We can save—"

"Come on!" bellowed Hogan. "You don't known 'em . . . They're crazy! They ain't human. They—"

But Jules was at the door, drawing the bolts. It swung open violently, throwing him backwards and to the floor; and an avalanche of struggling humanity swarmed over him. Hogan fought his way forward; and grasping Jules' collar, dragged him into the room they had just left. He slammed the door, turning the key in the lock.

"Damn it, Jules—they hate us—don't you see?" he panted. "They've been trying to get in here for weeks . . ."

The door was shaking—bending inwards.

Jules pulled himself to his knees. Hogan threw a chair against the door; and, crossing the room, grasped the end of a heavy divan. Suddenly he stopped, raising his eyes to the window.

"Look!" he gasped.

In the darkness outside gleamed two great globes of fire. Motionless in the air they hung, twin balls of ghastly, iridescent blue . . .

"Thank God!" cried Jules. " . . . The switch!"

With a rending crash the door of the room burst inwards.

Hogan yelled: "I'll hold 'em. You go—through the window!"

Jules saw Hogan hurl himself at the first man through the door. In an instant he was the center of a screaming, fighting mob. Jules kicked out the window pane, and climbed out onto the porch. A dark form rose before him. When he hesitated an instant, he was grasped from behind. He whirled, and struck with all his strength. Then he vaulted the railing, and dropped to the lawn.

He stumbled across the grass. Close behind came thudding feet—shrill cries. He reached the low wall of concrete and lead; and threw himself down beside it, fumbling for the switch that he knew was there. He felt a

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THE LAST WOMAN

By **Thomas D. Gardner**

(*Illustration by Paul*)

They laughed and passed comments on the Last Woman. Her face flushed under their cold merciless humor. She was to them another animal of earth.

THE LAST WOMAN

THROUGH the long lonely days the Last Woman reclined on a couch and watched the dribbling throng of Intelligences pass.

From where she was she could see the tall towers and skyscrapers of the largest city on Earth. She knew it only as Nuk. Twenty thousand years ago its people had called it New York, but that had been in the Golden Age when there were two sexes. Through the graceful colonnades that once had been called Grecian, the Last Woman saw a silver torpedo-shaped vessel leap into the empyrean blue with ever increasing acceleration.

Almost immediately it was a silver speck, a dot in the infinite and then it was gone. She knew that in it were men of Earth on the Interplanetary Patrol. Before they returned they would see the cloudy sky of Venus, the blazing deserts of Mars and perhaps the Mining Companies on the cold dead Moon. Her heart swelled with envy, but those adventures could never be for her. She was an anachronism.

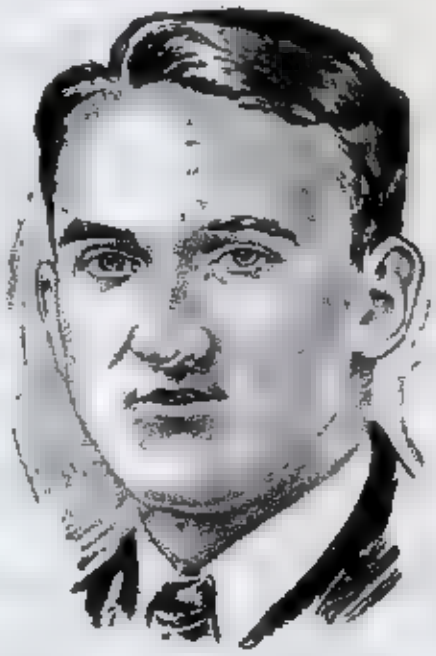
A sudden gust of hate swept over her and turning suddenly she looked out the other side. But here she saw the tall spires of the Natural Science Laboratories, which were more distasteful to her than ever. Idly she let her gaze rove over the hurrying crowds in the street below. Some always turned into the archway and approached her dais, for her fame had traveled to the farthest point of the solar system.

The Last Woman wrinkled her nose in disgust at the group that approached her now. The varying types of the planets were well represented. Only the metal men were absent. They never came. With their electrical brains and metal bodies came a cold disdain of anything that harped of the foolish, sentimental past that poets were wont to call the Golden Age.

In this group were several of the seven-foot lizard men of Mars with their big brain cases and darting eyes that saw everything. They laughed and passed comments on the Last Woman. Her face flushed at their cold merciless humor. She to them was another animal of Earth to be examined and discussed. The Last Woman felt sorry for the Venusians with their four-foot ant-like bodies. They seldom if ever spoke, but merely looked at her. She couldn't help but feel that they were sorry for her, that they disapproved of the Earthmen exhibiting her as if she were an animal.

Ah! the Earthmen. The Last Woman hated them. They had no sympathy for her. They were gods and she—a woman. She represented to them all that they had fought and destroyed in the past and so had reached the mighty pinnacle of knowledge and power that was theirs—lords of the solar system.

As this group approached the railing that separated her from the observers she saw that it was a class from the University. The Professor in charge was Historian Z11. Of all things on earth that the Last Woman hated most it was this man. He took especial delight in recounting each time he brought his class to see the anachronism the history of the Science Civilization and of her. Historian Z11 smiled a cold greeting, turned and faced his class to begin his lecture.



THOMAS D. GARDNER

DESPITE its title, this story is not calculated to appeal especially to our feminine readers. For it is a red-blooded story, and a bizarre one; yet it deals with events that are well within the limits of probability.

The understanding of how our sex glands function, and their effect upon us is just beginning to be understood. When we finally do understand, certainly a new era will dawn in the history of the race.

Some men already predict that women will eventually rule the world, and they will at least make the attempt to overthrow masculine domination. But suppose they lose, and man holds undisputed sway, with but one woman left. Will men idolize her; will they fight over her like wild beasts; or will they enslave her? The answer that our author gives is much different than you will think. This is a distinctly original story, and deals with an absorbing idea.

"It all began back in the so-called Twentieth Century," Historian Z11 began. "Henry Zeeman, now known as Biochemist G4, was attending Columbia University in the ancient city of New York. You will probably wonder at the peculiar nomenclature of the people of that time. It was a relic of the Dark Ages in which the names denoted occupations, paternity, and sometimes ownership. Zeeman was considered peculiar by the young men of his time because of his dislike for girls. Pardon me, fellow scientists, but the word 'girls' was used to denote adolescent females. Whenever Zeeman was questioned on the subject he admitted that he did not necessarily dislike girls but that the time wasted in their company could be used to much better advantage in experiment in the laboratory. He defended this point of view vigorously.

"Now contrary to many of the medical men of his day Zeeman was not abnormal. He was as much alive and healthy as any young man of his time. But Zeeman was possessed of a driving desire to know. In order to eliminate emotion from his life altogether Zeeman experimented with different chemicals and nearly wrecked his health in doing so. Some would repress emotion to a certain extent, as the nitrates, but in doing so would affect the nervous system.

"Zeeman had just about given up hope of achieving his

purpose when he ran across an account of the isolation of the four sex hormones—we know now that there are nine—by several scientists. This was the first ray of hope that Zeeman had received. He was then twenty-two years old. Two years later he found an account of the chemical synthesis of these hormones.

"Zeeman analyzed the problem this way. If emotion and the libido were caused by these hormones what would be the effect of destroying them in the body as soon as formed? Would the secondary sex characteristics be affected? We know now that the secondary sex characteristics were not the result of the hormones then found."

"If they had been the result of those four all mankind on Earth would be neuter rather than intensely masculine. Ha! Ha!" a Martian boomed. "I can imagine a thin-chested neuter on the Interplanetary Patrol. Awrrk!"

"I THINK that we Earthmen can take care of ourselves." Historian Z11 continued as he flexed the muscles on his mighty arms and continued in a rippling roll of muscle over his chest. "It was in his last year at Columbia while working on his research problem for his Doctor's degree that he discovered the compound we call the Elixir. As you know the Elixir was a fabled liquid that would renew youth. This compound made men into gods and in the Council seven thousand years ago it was decided that the name Elixir be chosen as a permanent name instead of the chemical one used until then.

"In a concentration of a millionth molarity one drop sufficed to break up the four sex hormones during a period of six months. The compound acted as a catalyst and itself was not used up. The dose was injected directly into the blood stream. Success was his at last. The next thing to do was to convince the world. Within five years over a hundred of Earth's foremost Scientists were using the compound regularly.

"All the energies that had been turned toward sex and the emotional side of life were released for thought and work. Every branch of science advanced and the scientists began to control the money and power resources of the Earth. The Moon was explored and its rich mineral deposits worked. Fellow scientists, that was the first step toward our Science Civilization."

"You mentioned the exploration of your Moon, Historian Z11, what type of space vessel was used? No space vessels reached Venus until the fortieth century." The shrill voice of a Venusian piped.

"Well may you ask, Venusian. I have ever noticed that you have given very close attention to my lectures and I freely predict a glorious future for you. The ancients used crude rocket propulsion with molecular energy motors. In the Museum you may still see the first vessel that reached the Moon. I shall request Physicist S178 to explain it to you.

"But I digress. The second step came twenty years after the discovery of the compound we call Elixir. Surgeon N3 found a method of forcing nerve cells to heal quickly and join one end of a severed cell to the end of another severed cell and grow together. Can you realize what that meant? Previously men grew old and died. Their life work was cut short and someone else had to take it up.

"But with the great advance of antiseptics and surgery the discovery of Surgeon N3 enabled the brain of a great Scientist to be placed in the body of another man and he could carry on his work. This was done secretly for over two hundred years. The Scientists formed a coalition and began their plans to rule the world. That was the second step."

"Did not anyone ever suspect what the Scientists were doing?" a Martian asked.

"Yes, several did. But they mysteriously disappeared. An empire cannot be built on the fabled 'Milk of human kindness.'"

"Where did the metal men enter history?" a Venusian inquired.

"That would take us too far off our lecture, but in passing I will add that Physicist S245 made the first electrical brain. The metal men were a great help in the war of the sexes. But I am anticipating. From your courses in Biology and Heredity you know that in Earthmen the determinant of sex is the XX and XY chromosomes in the sperm. The former fertilizing an ovum gives a female and the latter a male. After the twenty-seventh century, Scientists awoke to the fact that there was not room for the normal and subnormal men and the conflict between the sexes had reached a point, that women were feminizing civilization to such an extent that the variability in the male had almost ceased.

"Since all progress has been due to the variability and mutation of the sperm, the race was in danger. The first Council of the science empire was called. They decided that Woman must go. They based their decision on the fact that the female bred truest to type and held the primitive characteristics longer than the male and that she reverted to the primitive type the quicker.

"The way was open because Biochemist G67 had synthesized artificial ova over fifty years before. The plan was to use a fixed ovum as a base and let all variability lie in the sperm. By selecting the type of sperm desired only males could be produced. These fertilized eggs could be raised in incubators. There could be no turning back. There were two million Scientists and over five hundred thousand metal men. Atomic Physicist SQ132 had developed the heat ray twelve years before. In thirty-four days of battle every woman, child, and man other than the Scientists died. At last Science had triumphed. Thus in the year 2794 A. D. the Science Empire was born."

"What did A. D. mean?" inquired a Venusian.

"Pardon me, I had forgotten. A. D. was the abbreviation of two words *Anno Domini*. They referred to the supposed birth of one of the gods in one of the primitive religions, just which one I am not sure since several claimed the Earth-born god as their own."

"If all of the women were killed and the inferior men were also killed, how did this woman come to be?" inquired a Martian.

The Professor of History smiled a cold smile. There was mirth in it—of a sort. He glanced at the reclining figure on the dais and smiled again.

"This woman! Why she is an accident. An XX sperm slipped by the examination board. After the birth of the infant the Scientists decided to let it live and exhibit to the varying types of life what primitive man thought most desirable."

An Explorer Returns

A RIPPLE of mirth swept the class. The woman flushed a dull red. Her violet eyes blazed hate at the

Historian. The Historian smiled with the cold assurance of a great race examining a primitive savage. He knew that this was an old story to her. That she had been well educated. There was a great deal of cruelty in these supermen. Historian Z11 took it out on the Last Woman.

The sun was sinking, long black shadows crept across the floor. Suddenly an orange beacon blazed far across the city. Night was coming and this mighty city was preparing to continue its work. Only the Last Woman felt depressed. The night suggested death and the Last Woman was the only one on that Planet who was foredoomed to die without a single helping hand. Her brain would not be transferred.

The class turned to go. It was almost time for their class in Matrix Calculus. A single Martian lingered looking at the woman.

"Anachronism!" he hissed.

Martians were like that.

The woman rose wearily from her couch. The robot had come for her. The little metal car driven by atomic energy awaited. The woman entered and was whisked away. The night wind whistled through the deserted building. The last rays of the dying sun fell full on a statue in one corner of the building. It was a statue of Niobe—a relic of ancient Greece. The statue seemed to be weeping. Was she weeping for the Last Woman? No one could tell.

* * *

The patrol ship IPPP56 was returning to earth with Explorer X12 who had been wrecked on the asteroid Ceres for six earth months. The Commander V15 was well pleased. He had searched for months for the Explorer X12. Several months ago a black derelict came hurtling through space along his patrol route. On examination the derelict had turned out to be the missing explorer's space ship. A great meteor had torn completely through the stern wrecking the atomic motors and letting his precious atmosphere out into space.

There was no sign of his crew of Martians. After carefully plotting the course of the derelict it was found that it had come from the asteroid belt. So the patrol ship had set out in hopes of solving the mystery. Twelve days before a flickering violet beam had been observed on Ceres. On investigation the lost explorer had been picked up. They had lived on the raw products of the giant fern vegetation of that planetoid. But this is not a chronicle of the hardships that they had gone through. It is sufficient to note that they were rescued.

Explorer X12 stood before a quartz window looking out at the blackness of space. A few stars shone like diamond dust on black velvet. The Commander entered the room and touched the explorer on the shoulder.

"Quite a change from the barren sky of Ceres, eh!" he said quietly. "You were very lucky in preserving a violet light. You have had an interesting adventure. The Scientists of the Council will be interested in your story."

The explorer shrank back, his eyes wide open in fear, and his face pale.

"No!" he cried.

"What's the matter?"

"I don't know. You know of course that I ran out of Elixir."

"What! Man do you realize that your body has become accustomed to it. What will the result be? Here, take a shot now."

Sudden fear shook the explorer in a palsy.

"I tried to. The first injection made me very sick. My body won't stand it. I tell you I won't. I won't."

The Commander spoke slowly. "Come, you must brace up. Without Elixir you will become an atavist. The first since the beginning of the empire. The Council will condemn you to death. Do you want to become a savage?"

The Explorer shuddered. Beads of perspiration broke out on his forehead.

"I can't now," he mumbled.

"Very well, but if you do not come out of this attack of protoplasmic insanity I will have to report you to the Council." So saying this he turned and left the room.

The space ship plunged on.

The Last Woman was before the Council—that body of the solar system's greatest Scientists. Earthmen, Venusians, Martians, all were represented here. At the head was the greatest brain on the planet—Metal Man 89. He was the sole representative of that machine civilization. The Council was tired of the Last Woman's attempt to take a hand in interplanetary affairs. They had just warned her that if she persisted the sentence of death would be passed on her.

Proudly she stood and looked the Council over, but it was the look of a hunted beast. They were her superiors in every way and she knew it. Slowly she turned and passed from the Council Chamber. As she left Explorer X12 came in. Both stopped. What was this that stirred in the breasts of both. Could it be that for the first time in over nineteen thousand years love flamed? The explorer sucked in his breath. He was a young man and still inhabited the body he was born with. The Last Woman smiled and passed on.

THE Council gave the explorer over to the Scientists to cure within six months. He was temporarily classed as an atavist and a great deal of interest was shown in his peculiar case. Why the man had actually developed emotions. How primeval!

The Last Woman looked into the long mirror in her private rooms that night and smiled. She was a beautiful woman from the viewpoint of twenty thousand years ago. Well formed with golden hair, violet eyes, cream complexion and with the grace of a gazelle. Suddenly she laughed, for the first time in her life she had an interest in life and the world. She was in love. If Psychologist M09 had seen her he would have immediately diagnosed it that way. Why should I go against his opinion. He should know, having delved deep into the nervous reactions of the lower animals and the simians. A light footfall fell on her ears. She turned with an exclamation for no one was allowed in her rooms. Only the robots and they did not count. The explorer stood in the doorway and held out his arms. The Last Woman needed no second invitation.

"It is death to be found here. You must go at once," the Last Woman whispered hurriedly.

"It is death anyway. I have gone back to the past. I have spent the evening in studying the old books in the library that described love and life. I love you. I can't help it. What can I do?" The man's voice was broken and his giant frame shook as with an ague.

"I thought you were under observation in the Medical Ward?"

"Yes, but I slipped out."

A gong rang loudly. The man gave a guilty start and started for the door.

"Look for me tomorrow night." His last agonized whisper floated back and he was gone.

The next day passed quickly. The Last Woman seemed to live in a dream world. But as soon as she opened her eyes the spell was broken. A shudder of horror shook her frame when she contemplated the gigantic civilization she was trying to outwit. Part of the day she was in the laboratory of Comparative Anatomy. Here her body was contrasted with the females of the simians. Disgust claimed her as she heard the Professor point out similarities between her beautiful form and the shaggy anthropoids.

Explorer X12 worked feverishly in the great library catalog turning card after card, searching, ceasingly searching. There was a chance of winning to freedom since he had heard that morning of the completed exploring vessels that were to take off for Alpha Centauri. Would he never find it? Ah! Here it was, "Methods of Life, Psychology, and Mores of the Primitive Savages inhabiting Earth prior to the Scientific Empire." The reference was to the great mass of books, most of which were worthless, in the building reserved for the pre-scientific period.

The worst fears of Psychologist M06 were being realized—the explorer was going primitive. Already a hunted look had come into his eyes, his attitude suggested stealth, and he trembled as he searched among the millions of books that were indexed in the library. Selecting several of the most pertinent books in regard to existence in a primitive environment without all the modern appliances of the Science Civilization, Explorer X12 left the building. But what was that? A Man! Only Psychologist M06 who shook his head at the unreasoning attitude of the explorer.

A flaming sun sank behind the tall buildings of the most wonderful civilization the solar system had ever developed. Long purple shadows chased one another along the pavement, an orange beacon rose from the southern part of the city, while a man slunk furtively toward the gigantic building that housed the Last Woman.

The Last Woman* watched the door in eager expectancy, for had not Explorer X12 said that he would return? Ah! There were his footsteps. The next moment she was in his arms sobbing with relief—for she was just a woman although highly civilized. The man was incoherent with joy and whispered rapidly.

"There is a chance that we can get away. Do you remember the expedition that was to start to Alpha Centauri? The cruisers have been completed and all equipment has been placed aboard. We can slip away in one of the cruisers. They are the fastest ships in the solar system."

"Where could we go—there is no place in the solar system we can hide. Don't you see that if we escape it is a blow at the Science Civilization? There have been no mistakes or failures since the beginning nineteen thousand years ago. That is why the Earthmen rule. Where could we go?" The woman's attitude suggested dejection.

*Those who read this manuscript will wonder why the Last Woman did not have a number. There was no place in the Science Civilization for a woman. She was called simply the Last Woman.

"They are going to Alpha Centauri, we will go to Polaris many light years away."

"We will grow old and die before we get there. We cannot renew our bodies or transfer our brains." And the woman began to sob.

A Desperate Gamble

THE man laughed and then explained the relativity of time and space. How it would take many years to reach Polaris but to the occupants of the car it would seem as if it were only a few months. He told how the cruiser would approach the velocity of light and how their relative lengths and time would be altered.

A televisor disk clouded and the two whirled in fear. A mechanical voice droned. "The completed expedition for exploring interstellar space will leave day after tomorrow. The latest telephotos will be broadcasted at once." The disk became rose, then shot with whirling streamers of red, then abruptly cleared.

The scene that was presented lay in upper Nuk. Back of the foreground could be seen the tall buildings of the city. In a little cleared space lay six great cruisers. They were not spectacular but efficient and deadly. A little over two hundred feet in length, torpedo-shaped, and driven by electronic rockets.*

The voice broke in again. "The vessel is fully provisioned for a period of ten years and is armed with high-powered automatic rifles for reducing cities, with ultra-violet and heat rays, the electron guns, besides poison gases and high explosive bombs. The crews are picked so as to represent all the inhabited planets. It is the hope of the Council to extend the sway of the Science Civilization over the galaxy. Within two thousand years the Physicists who are investigating the fifth and sixth dimensions promise a means of propulsion and velocity attainment greater than the velocity of light."

There followed a detailed survey of the interior of the cruisers. On all the planets only two followed the televisor views with fear and trepidation. What luck! The controls of the ship were of the standard type used on the interplanetary vessels.

"Have you any weapons?" The Last Woman asked the explorer.

"Only an automatic and a flame pistol. If we can get one of those cruisers and get started out of the atmosphere they can never catch us. I'll be here tomorrow night two hours after the orange beacon comes on. Be ready."

The Last Woman was still fearful. "Won't they signal Mars to stop us? Oh we can't! We can't!"

*Within the atom the laws of thermodynamics do not apply. Instead of the conservation of energy one has the conservation of momentum. The propulsive power was complex but very efficient. The electrons within the atom were ejected with a very high velocity, their wavelength approaching short gamma radiation. The atoms were made artificially radioactive by altering the nature of space about the nucleus.

The quantum repulsive factor of the positive charge coming into phase with the electron wave caused the ejection. The leaving electron with its mass multiplied 10^{24} times gave a tremendous shove to the atom which was communicated to the vessel. The electron was revolved into hyper-space and its vector sign changed, then back into the present four-dimensional continuum thus giving a second momentum to the cruiser propulsive unit.

The electrons then became free electrons with a longer wavelength having given up a greater part of their energy. The loss in mass of the electron and protons furnishing the energy. (If this seems far-fetched remember that modern quantum theory is even more so, and the increase of mass, wavelength of electrons, and protons, the radioactivity of matter as due to being in phase with the bound electrons, and the repulsive force or quantum number are well known today by atomic physicists.)

But the explorer was reared in a different school. He did not forget that he was once a superman.

"By the time we reach Mars we will be a thin disc due to our velocity. They can never locate us. We will make it, never fear."

"Tomorrow!" breathed the woman.

Robots labored deep beneath the cities tending great machines that steadily turned out the machinery to supply the Earth. The expedition's crew came in from Venus and Mars. The Martians laughing and talking, taking it all as a rare experience; the Venusians silent as ever going about their work efficiently. One of the Metal Men was to head the party. Many years would pass before they would return to Earth. What would they find in the system of Alpha Centauri. The explorer and the Last Woman anxiously watched the sun traverse its slow path across the sky. Would night never come?

AT last night fell and the sun set in a sea of crimson. The explorer was murmuring prayers that he had read in the ancient books. Explorer X12 had indeed gone backward. The atavist's mind was a blur of conflicting emotions, his intellect clouded, fear struggled with hope. Under his tunic he had hidden the powerful automatic and two belts of clips besides his flame pistol with extra charges.

If he had been caught with these arms his life would have been forfeited, especially since he was supposed to be taking treatment for his mental ailment. Lights blazed from the pinnacles of towers, the hum of the mighty city became a lulling rhythm, official and private sky cars flashed and dipped, the night life had begun. Life was now concentrated in the great laboratories under arc lights that made each corner blaze. There was no rest in Nuk. There was activity everywhere and then more activity—that is how the Earthman ruled.

The explorer crept from the steel skyscraper's emergency exit and hurried to meet his mate. The Last Woman was waiting. There was little that she could take since speed was necessary. Explorer X12 entered silently—the robots must not be disturbed.

"We must go. I have worked out a route underneath the city. We will take a tube car from the Central Station to North Ward 8 and then pass through the Dissecting Rooms, since they will be deserted at this hour, and then it is only a short distance to the cruisers. Only a perfunctory guard will be kept as they think that no one will be interested in the cruisers now. Come!" So saying the man picked up the pitifully small bundle of personal effects of the Last Woman.

The automatic elevator carried them silently to the eighth level beneath the street. Here wide corridors led to other buildings. The walls were lined with pipes and conduits, the man carried the flame pistol in his hand, the throb, throb of the machines kept the walls gently vibrating, hot air swirled around the two, and a feeling of power gigantic filled their hearts. Televisor disks whirled at interesting corridors. Were they being checked? Evidently not for no alarm was given.

Two more corners to go and then the Central Tube Station. A robot moved ponderously from a branching corridor. Its crystal eyes gleamed as it saw the two, but before it could give warning the flame pistol shot a violet-blue flame that cut the metal body almost in two. They went on. A tube car came to their signal and Explorer X12 hurriedly pushed the Last Woman in and closed the door.

The car moved off slowly until it entered the tube then shot ahead with terrific velocity, then it slowed at the station of North Ward 8. Here was the first big test—could they enter the corridors leading to the Dissecting Laboratories unseen? How they managed it the two never understood but at last they were hurrying down the dimly lighted way. The explorer whispered.

"We must pass through this chamber." Slowly he opened the door and apparently seeing no one entered. A gigantic Martian far across the long room glanced up from a specimen that he was examining, and then in long leaps came rushing toward them. The automatic spat once, a beady eye became a bloody hole, and the body crashed to the floor. They must hurry. A noise, a suggestion of a sound, they whirled, there in the door stood a Venusian with levelled heat ray.

Defeat! The woman sobbed as overwhelming despair swept over her. The Venusian regarded them silently, lowered his ray, turned and disappeared. The Venusians *were* sympathetic.

At last the cruisers lay before them gleaming in the starlight. How peaceful everything looked—then a wandering beam of light outlined them clearly. The city awoke with a roar, lights flashed, gongs rang, and guards broke from the entrance to the field and ran toward the two. The explorer seized the hand of the Last Woman and ran toward the lighted opening in the cruiser that lay a scant two hundred feet from them.

A flash struck the ground by them sending up a spout of dirt and stones. They were almost there. A red beam flashed by the running pair, it struck the polished wall of beryllium of the cruiser and glanced harmlessly off into space. They reached the portal, lunged through and the man had closed the lock. Now came the big test. The explorer must get away from the Earth—already other ships were being manned and the alarm sent out to the Interplanetary Patrol.

"This way to the controls! We must get there." Said the man as he ran toward the bow of the vessel. The control room was reached—but how among the myriad controls, buttons, and switches could the man find the right ones.

His training as a superman came to his aid. He snapped over the main power switch and the gigantic dynamos that furnished current for the powerful fields of force leaped into activity. They whined like hungry dogs and settled to a steady roar. Viciously he jabbed at the gravity equalizers, turned on two propulsion units—more would raise the shell to incandescence in the earth's heavy atmosphere.

"Why are you heading north instead of out into space?" The Last Woman inquired.

The man laughed gleefully and said:

"They will be expecting that and will concentrate the Patrol above Nuk. We will fool them." But he was forgetting that he was no longer a superman but a primitive while they were trying to outwit brains that had never been defeated.

SOON the frozen plains of the north lay beneath them. Their velocity was over two thousand miles per hour at an altitude of sixty thousand feet. The Aurora hung

like a curtain before them; green and red streamers signalizing success or defeat.

On their televisor disks appeared a dozen dots that swiftly grew into long ships of the Interplanetary Patrol. The Last Woman screamed and the man groaned. A cold hard voice spoke from a receiver.

"Return to Nuk at once. You are surrounded. Fools!"

The man seemed to go insane and screamed like a wild animal.

"You'll never take us back!" He pushed the ray controls madly. Five blinding beams leaped out, two red, two violet, and one the ionizing beam of a cathode ray. Three ships were caught in this wholly unexpected attack. For who would dare to defy the Patrol!

One of the red beams met a vessel head on, it leaped into blinding, coruscating incandescence, melted and disappeared. A violet beam swept over a ship, it continued its plunge toward the Earth that lay like a cradle of protecting white beneath them. The cathode ray caressed a ship and that ship was no more. Those electrons driven at almost the speed of light broke down the electrical field of the nucleus of the atoms and the whole ship exploded as the nucleus disintegrated with violence.

The explorer shouted in joy—but too soon. A brilliant plane of light flashed from the flagship of the Patrol, and the captured vessel, neatly cut in two, started on its long swift plunge toward the ground. The Earth rocketed toward them as the man seized the woman in his arms and leaped toward the emergency cylinders. Entering he hastily slammed the door and cast off—but too late—his speed was terrific and the cylinder struck the snow field and plunged far down into the icy blanket. Oblivion swept over the two. The Aurora shimmered and blazed in the cold heavens and seemed to chuckle.

The Council Room was still. The greatest case of insubordination that had ever arisen in the solar system's great civilizations was being tried. The atavist was a pathetic broken figure, the Last Woman alone defiant. All the evidence had been heard and the Head of the Council, Metal Man 89 gave the verdict that will go down into History as the policy of the Science Civilization. His cold, motionless voice brought shivers to the condemned.

"Over nineteen thousand years tago we, the Scientists of the Earth, decided that for the good of Civilization and the progress of the race that there should be only one sex—male. Putting all our energies to the task of building this Civilization we succeeded beyond our wildest dreams. We rule the solar system and soon will rule the galaxy. You represent that influence that for ages dragged mankind back to the primeval slime out of which he had struggled.

"You even dared to light the beacon of Love in a Civilization that overthrew its reign that had enwrapped the world in its coils like the octopus does its prey. Bitterly do we regret allowing the Last Woman to live, for it has deprived us of a good man—Explorer X12. He could have been cured had not the chance to slip backward presented itself. Never again shall we allow or give an anachronism or an atavist a chance to live. They must die even as we the Supreme Council of the solar system condemn you to death by the flame."

No sound was heard for several seconds as the Metal Man ceased speaking. The man was calm now. He raised his head and looked long at the tier on tier of gathered Intelligences. Did he sigh for his lost position? Rising slowly he took the hand of the Last Woman and walked slowly by the seated Councilors toward the metal door that led into the chamber of flame. Reaching the door he turned and looked back. The rays of the sun lit up the crystal emblazoned chamber with an ethereal beauty. The Last Woman was stunned—she couldn't believe it yet.

The two passed through and found themselves in a small metal walled room with no exit. Explorer X12 turned to clasp the woman in his arms—but even as he turned the room leaped into brilliant flames. When they ceased an instant afterward only two little conical piles of ash were all that remained of the Last Woman and the Explorer—those who had dared to love. An exhaust fan started to whir with a subdued murmur. The two piles of ash rose up toward the ceiling, met, coalesced, and as one passed through the vent. United at last.

Outside a Martian laughed.

THE END.

THE STRANGEST MEMBERS OF THE SOLAR SYSTEM

THE moons of Mars, and the planetoid Eros, have always been extremely intriguing objects to the astronomer, because they are the smallest objects known to be moving in regular orbits. The unique oddities which they manifest -for instance, the inner moon of Mars revolves around him nearly three times a day, but is never seen from a great portion of his surface—together with the interesting discoveries recently made about Eros, and an even more startling conjecture as to the composition of this celestial object, are described in illustrated articles in the April issue of

EVERYDAY SCIENCE AND MECHANICS

The Reign of the Star-Death

(*Continued from Page* 1237)

heavy blow in the middle of his back, and then a hot, heavy weight upon his body. His hand found the switch, and he threw it over.

Hands were clutching at his throat. He caught a glimpse of a snarling black face, its nose and lips hideously rotted, its eyes dull and red. A great weight was upon his body. His last conscious impression was one of amazement that he should be so attacked—that these people should be so murderous . . . .

Then came a great, crushing roar—a sickening shock—and blackness.

Consciousness returned to Jules in the form of an uneasiness in his mind. He had a sense of obligation. He knew that there was something he must do. This conviction forced him out of the blackness which had enveloped him.

He opened his eyes, and struggled to sit up. Around him, all was quiet; nothing moved. Where before there had been a pandemonium of shouts and cries—now there was not a sound. All sound and movement in the world had ceased. The distant firing, the booming of artillery, was gone. A great silence was over everything.

Jules' whole body ached. He felt he could not move, and yet he knew he must.

Slowly, laboriously he drew from an inner pocket a square, flat box. Opening it, he drew out a thin, square plate, which shone in the darkness with a green, phosphorescent gleam. Among the mass of tumbled forms around him, he searched for a face that he remembered—a face that was black and partly rotted away. He found it; and held his dully shining plate close up against it.

For a long time he sat there watching the plate, but there was no change in the soft gleam of its surface; and slowly, a light of triumph came into his eyes.

He struggled to his feet. Stumbling he crossed the lawn, and entered the silent house. He fought his way among the mass of tumbled bodies there—and found a telephone. He held the receiver to his ear. It seemed to him that he waited an hour. Occasionally he moved the hook up and down. At last there came an answer.

"Operator . . . ?" His head was whirling madly. He had to struggle to make his voice obey.

" . . . Call Headquarters in New York . . . Pangborn—Jay Pangborn. Give him this message . . . Tell him—" here Jules swayed, and almost fell—"Tell him that Herbert Jules says . . . the rays are dead!"

Jules' knees collapsed. Still holding the telephone, he fell; and the blackness enveloped him again.

"I don't suppose anybody ever knocked so many people cold at one time before; and I hope they never do again!"

The speaker was Dan Hogan. Herbert Jules smiled wryly, but said nothing.

"It was just the thing, though," laughed Jay Pangborn. "If ever people needed to be knocked unconscious, that was the time!"

THE three men were seated comfortably on the broad porch of Jules' home. It was a beautiful afternoon. The little ripples on the Sound flashed silver in the sunlight. In the middle of the lawn the great spheres of the generator still rested on their pedestals, where a week before they had launched their terrific charge.

"You ought to leave that thing there, as a sort of monument," said Pangborn. "It certainly did its work well! . . .

"I remember," he went on, "I was just signing an order to send up more bombing planes; when, all of a sudden, everything went dark. Just like that! . . . The next thing I knew, a fellow was shaking me and giving me your phone message . . . I never knew a battle to end so suddenly.—Or an epidemic! We've been on the watch, now, for a week; and you were right—the rays are gone; there's no sign of them spreading anywhere . . . "

"It has been a wonderful experience," Pangborn continued, "to be around Long Island this week. Everybody so happy! They don't seem to care what *has* happened. It's just that this awful fear is off their backs. They go around the streets singing and yelling; every day is just one long celebration . . . And the doctors are making good headway, too. The ray cases stopped just where they were. Some were too far gone. Some of them will be paralyzed for life. But the great majority are as good as ever—minus a little skin."

A car drew up before the house, and a man descended.

"Oh Lord!" said Dan Hogan suddenly.

It was Peyton Matthews. He mounted the steps; nodded to Pangborn and Hogan; and walked straight up to Jules. His dark face was flushed, and he looked nervous.

Herbert Jules rose courteously to meet his visitor. Now his bearing was confident, his gaze direct. The lines of worry had gone from his face. Again he was the calm, self-reliant, and immaculate scientist who, weeks before, had been called upon to settle a small point in a Coroner's inquest.

"Good afternoon, Mr. Matthews," he said pleasantly.

"Dr. Jules," said Matthews, speaking rapidly as if reciting from memory, "I've been rotten to you, and I know it. I've hindered you in every way I could, and I'm sorry. I've been an idiot . . . "

He held out his hand. "I don't deserve it; but I hope you'll forgive me . . . "

Jules took his hand. "Of course!" he said quickly, smiling. "But, really it is unnecessary. You were doing your duty."

"Since you are so kind as to put it that way," said Matthews, "I am glad to say that I have a more pleasant duty to perform now. I have just received word from the Governor ordering your complete and unconditional release in the O'Brien case."

Herbert Jules bowed his head. "Thank you!" he said softly.

Dan Hogan chuckled.

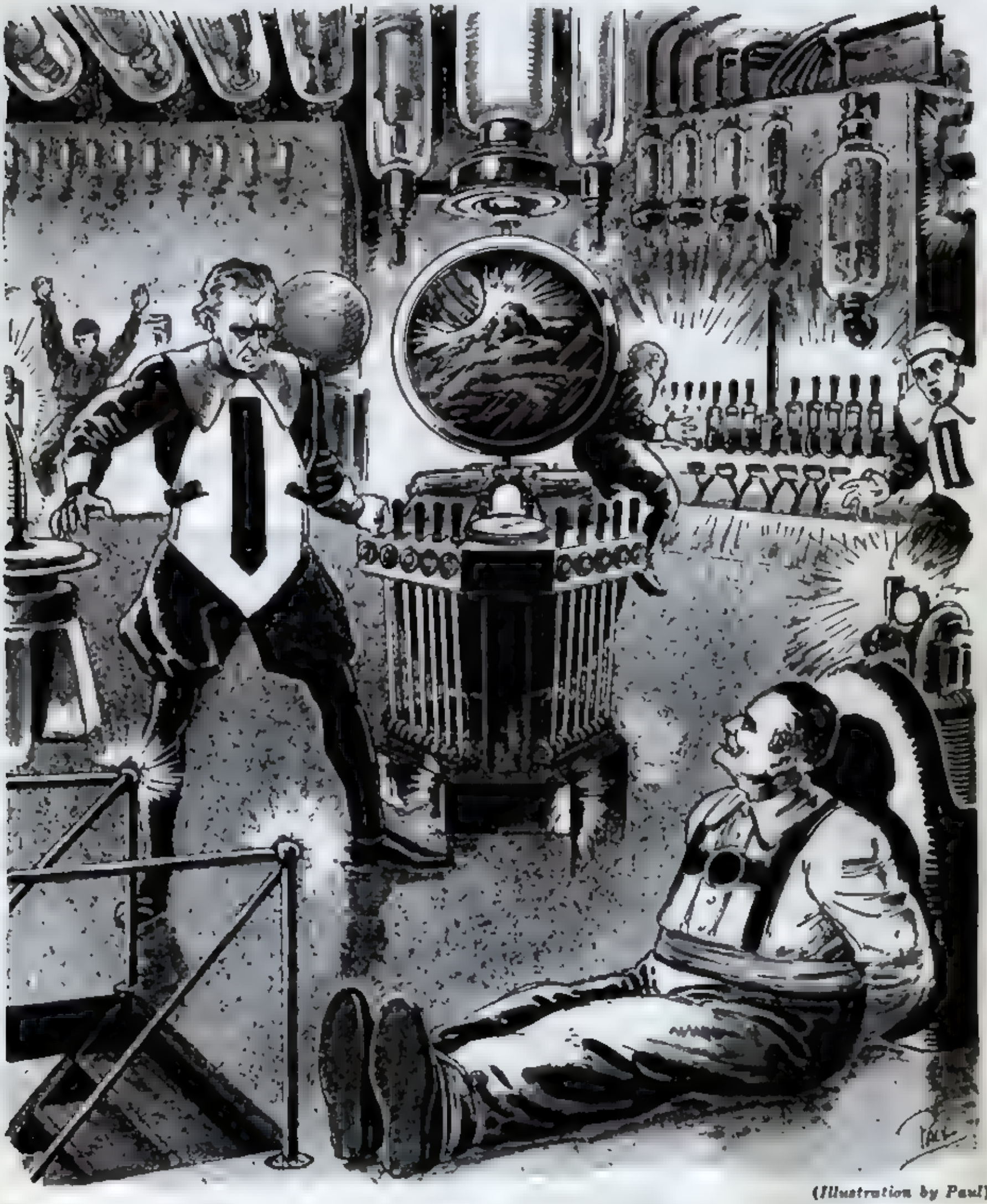
"Sensible of the Governor," he said, speaking as if to himself; "Try to put Jules in jail now, and you'll have another war on your hands . . . "

"You're right, Hogan," said Jay Pangborn with conviction. "It couldn't be done!"

THE END.

THE ELECTRONIC SIEGE

By **John W. Campbell, Jr.**



(Illustration by Paul)

A lightning storm was building up outside the power-house, and terrific, reverberating thunder roared through this mininture world.

THE ELECTRONIC SIEGE

By the author of "The Derelicts of Ganymede"

THE dock guard looked sourly down the long, bare customs landing. A stream of famous scientists had been coming aboard the space liner *Vega* all afternoon. They were the greatest scientists of Earth and Venus, taking passage on the chartered liner to Mars for the Interplanetary Society for the Advancement of Science Meeting for 2374, held once each Earth year. Pale faces identified the Venusian colonist-scientists, and the lightly tanned Earth scientists, but the figure coming toward the guard now was obviously neither.

He was a short man, perhaps five feet seven, but he seemed shorter because of the amazing girth he displayed. He must have weighed easily two hundred and seventy-five pounds, his round body mounted on chunky, blocky legs was topped by a neck so thick it was almost missing. He was equipped with a pair of stubby arms on the general plan of the legs. He waddled up on his blocky legs in a most amazing manner, puffing and blowing as ludicrously as an old steam engine of four centuries ago.

But more amazing than his own person was the moving rainbow he represented. Pale green, silken trousers, a deep red shirt, lavender suspenders, and a deep green sash matching his shoes completed his costume. No ancient oriental potentate, even Solomon in all his glory, was not arrayed such as this.

"Must be color-blind to like that," grunted the guard. Then he stared. Behind the man, following on a series of little self-propelled porter trucks, faithfully following the lead-set in the fat man's hand, was a pile of luggage as even this space liner guard seldom saw.

The weighty individual was grunting something to himself as he waddled hastily along, a curious expression of indignation, worry and annoyance intermingled on his puffy-cheeked face.

"Stupidity—rank stupidity of these public officials," he muttered. "Stupidity and red-tape. Will they never realize that it is business that supports them—yes and science too! Refusing Earth's greatest business man passage!

"More officialdom! Pass?" he barked at the dock-guard. "Yes, I've got a pass, and the very devil of a time I had getting it from that idiot, Commander Morrison. Interplanetary Lane Patrol Commander he is—and doesn't recognize the rights of business above science! Yes—Ezra Markham is right. You ought to recognize me—my pictures appear over the visonews frequently enough—and you're a passport guard!"

The grumbling multi-billionaire went toiling up the inclined gangway, the luggage trucks trailing behind like so many pet dogs.

"Steward!" he roared as he stepped off the gangplank.

A steward appeared immediately, dressed in his neat white uniform. He was soon followed by others, rushing to the scene of the emergency the roar seemed to indicate.

"My suite!" demanded Markham, turning over the lead-set and his pass to the handiest one. The startled steward accepted them dumbly, looked down at them, then seemed to remember his duties.

"Yes sir—right this way."

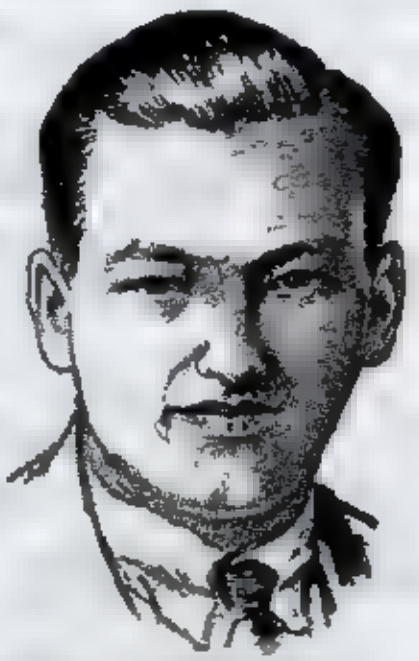
"What—this tiny cubbyhole my room? My closet you mean! Here—show me a suite. Taken? Who—scientists I suppose, scientists that never had brains enough to make a nickel for themselves. Come along—Ah—this will do. Who's in here? Edgar A. Freeman—he's on my engineering staff, I believe. Well—move out his bags and put my cases in. I'm going to the lounge."

The white-coated steward looked in blank surprise at the expansive back of the retreating Mr. Ezra Markham, scratched his head in puzzlement, and went to look up Dr. Edgar A. Freeman, inventor of half a dozen devices which had made space navigation possible on a large scale.

Mr. Ezra Markham seated himself in the largest chair in the main lounge (the only one that would comfortably contain his bulk) and began a very expensive cigar, made of the finest imported Venusian tobacco.

He then spent the next half hour assuring distracted stewards that the rigid "No Smoking" rules didn't apply to Mr. Ezra Markham in the least degree, and in filling the carefully filtered air of the space ship with a variety of noxious odors.

Presently they took off. The slim, graceful ship rose smoothly into the atmosphere, angling slightly up, then driving forward as the gentle hum of mighty Farrel Atomics poured their millions of horsepower into the McKinley space-drive discs.



JOHN W. CAMPBELL, JR.

MR. CAMPBELL'S humorous story, "The Derelicts of Ganymede," was a huge success. He shows now that he can do more serious work, with just as much skill and power as the humorous efforts. This story has many unusual aspects: it has strange adventures on another world, and a scientific theme that is audacious and yet convincing. There is a mystery to be settled on an inhabited asteroid: strange kidnapings and disappearances in space; a colony of scientific experimenters who defy the rest of humanity.

That is the background of this unusual story, which shows vividly some of the queer tricks that nature might play to upset the best laid plans of mice and men.

MARKHAM looked at his jewel-studded wrist watch and grumbled. They were a few minutes late on the take-off. One of the stewards remarked (under his breath) that that watch must have been made so thick that more jewels might be crowded on,

Shortly after their take-off, a slim, powerfully built man in the white and blue dress uniform of the Interplanetary Lane Patrol came over to Mr. Markham and very definitely pointed out that "No Smoking" meant a complete absence of smoking, whether it be smoke hallowed by the said Mr. Markham, or the second apprentice oiler's assistant.

Mr. Markham put out the stub of his cigar. "I thought," said he testily, "that you men had ships of your own to go in. Since when have Lane Patrolmen been riding passenger liners?"

The Lane Patrolman, not unnaturally proud of the reputation of the Service, replied a bit hotly. "This is a special occasion, as you should know, Mr. Markham. Two years ago a group of scientists calling themselves the Eugenics Research Colony set up an experimental colony on some undiscovered planetoid and have been experimenting on human genetics with captured subjects. Such fine men and women as are aboard this liner would be an obvious prize capture for them, and we are guarding it heavily."

"Humpf. And why has it been going on two years, may I ask?" retorted the disgruntled plutocrat.

"Because there are more than five thousand known asteroids that might house that colony, and because their ships have a weapon we have not been able to duplicate —the protolectric gun," replied the officer, turning smartly and walking away. Markham chuckled. The Lane Patrolman had retired in poor order.

The E. R. C. was a sore spot on the Lane Patrol's otherwise spotless record. Thanks to a mechanism capable of projecting twin beams of highly dangerous electrons and protons from a "gun", their ships had beaten off patrol cruisers time and again. Secret service men of the Patrol had indeed been able to get into the "Colony"—only to become unwilling subjects to this experiment with human lives. Picked men all, these men of the service, and desirable material for the Research men. Four men so far had been released after six months' imprisonment of the most heartily detested nature to return with a tale of absolute failure.

Markham rose, and walked back to the aft-walk, a narrow corridor lined on one side with the heavy armour plate of the inner hull, and on the other by six-inch, metal-ribbed unbreakable glass. Here, where only the dimmest lights glowed, the stars and planets shone with the cold, unwinking glory of space, and the sun of space poured down its bluish light in blinding glory.

Behind them now the greater and lesser globes of Earth and Moon were circling in slow majesty, yet from this million mile distance they seemed, and the whole solar system seemed, more as some marvelously ingenious planetarium where unseen supports and unseen wheels drove these visible models of worlds. It seemed impossible they could be real, that Earth with its billions and Moon with its millions of inhabitants were real worlds.

Silently the stocky man watched out into the night. Dimly his eyes made out the dark, torpedo shape of another ship, a Lane Cruiser, some fifty miles astern, and another off to the side. Fifty-man cruisers each one, equipped with the latest devices of offense and defense—but would they be able to drive off the E.R.C. ships?

The dim figure started as he observed the slow blotting out of stars in the Milky Way. Another ship!

Simultaneously there came the soft hum of an alarm signal from within the ship. A moment later the swift tramp of steps, and then a start—a surge of power, and the acceleration that had been held at a comfortable 32 feet per second, Earth normal, was drawn swiftly up to three normal, the highest acceleration a passenger ship could safely stand.

The stocky man, now under a weight of fully eight hundred and twenty-five pounds, should by all rights have lain down at once. Instead his frame seemed to stiffen, the outlines of his body subtly changed, and he glanced along the deserted companion-way hurriedly assuring himself no other was in sight. Then—instead of the infinitely laborious crawl to be expected under nearly half a ton of weight, he walked easily with firm, lithe strides to a sheltered nook behind a great beam. He waited there quietly on his feet! Now there was an amused smile on his face, and the puffiness seemed somehow gone, more an appearance of swelling prevailed. His grey eyes seemed flashing with interest, his shoulders had lost their slough, and had come back squarely.

THE Patrol cruisers were dropping swiftly astern, turning to meet the rapidly approaching sphere ship that was swimming nearer in space. It was maneuvering that the line of the enemy's approach would not bring him directly between them.

Faint halos began to form about the cruisers, and now about the passenger liner. They were the faint halos of magnetic and induction screens that would stop any shell, or any induction ray before it reached the ship. But unfortunately not the twin beams!

Eyes alert, the man watched the sphere come sharply near the two cruisers—a sudden flash, and it was bathed in flaring, shimmering light, warring energy as its powerful screen battled the rays of the Patrol ships.

Two streams of nearly invisible fire reached out in lines as straight as a linear equation toward the two Patrol cruisers. Each was in reality a twin beam, and each was potentially deadly. They snapped out in absolute lines —till they hit the magnetic fields about the patrol ships, then they bent sharply as their electric charges were deflected by the field. Presently they moved swiftly, shifting till the deflection of the field no longer carried them past the ships. Then—a single flash of livid flame, a bursting puff of enveloping fire—and one Patrol ship was punctured, its atmosphere glowing brilliantly under the terrific electronic bombardment.

The Patrol ship, perforce, veered off and soon the second ship came in for a like dose. Again—again they were driven off. It was obvious that the sphere ship did not want to destroy them, merely to cripple them.

Finally each beam split in two, and they wavered and waved weirdly as the ships strove valiantly with their magnetic fields, attempting to divert them sufficiently. Meanwhile a constant terrific bombardment of induction rays was driving at the sphere, its screen flaring vividly.

The two separate beams found their mark, the Patrol ship seemed to glow all over its surface, and instantly

every ray, every screen went dead. A moment later, the second Patrol ship went dead.

The stocky man cursed softly. He turned, and as the ship lurched slightly to a still greater acceleration, nearly three and a half gravities, in its hopeless attempt to flee, he ran lightly down the companionway, slowing to a walk as he reached the bulkhead door. Then his body seemed to slump, once more his powerful shoulders sagged, and he crawled heavily into the lounge. The other passengers were struggling on hands and knees, or flat on their stomachs, slowly moving along. Finally he fell forward and lay motionless.

Through a great, curving port he could still see the sphere climbing up behind them, rapidly overhauling them. Suddenly two beams of fire were reaching out for their ship—two great beams that bent sharply as they struck the *Vega's* magnetic meteor-shield. Careful manipulation—and Ezra Markham started violently, his muscles contracting, while every sharp bit of metal in the room gave off fans of blue electric fire.

At that same instant every man on the ship fell senseless under the powerful shock transmitted to them. Like the Patrol cruisers, the lifeless, defenseless ship careened on through space, her acceleration dropping immediately to Earth normal as automatic machines took up the unconscious pilot's duties.

A dozen men in silver-grey uniforms were standing about the room when Markham regained consciousness. One of them was bending over him, peering with surprised interest at his magnificent display of coal-tar dyes.

"Who," demanded the E.R.C. man with interest, "are you?"

"Ezra Markham," answered the prostrate man sitting up, "Who are you?"

The lean, tanned face split in a grin. "Tod Morley, not that it makes any difference. And so you're Ezra Markham. Well, well. From the looks of you I should say your type wasn't wanted on our colony. But—it is an experiment for the benefit of the human race, and we feel sure that a man as you would want to contribute to its success—say a million or two. In the meantime—just move over to that corner." A ray pistol in his hand swung on Markham, and the twin rays leaped out. The animate rainbow gave a yell of surprise and pain, and scrambled to his feet with an activity surprising in one so stout. With the inducement of the pistol he was herded hurriedly to the indicated corner.

CHAPTER II

An Artificial World

IN the center of the lounge all the scentists were grouped with the captured crew and the I. L. Patrolmen, helplessly hedged in by a barrier of brightly luminous blue-green rays. Professional looking men in simple uniforms were going among them, pointing out one here or there, who was immediately singled out and put in a second, smaller group. Now Markham was marched up, and the entire group efficiently escorted to the communication lock, where a long, flexible tube between the ships permitted them to go from the passenger liner to the space ship without space suits. Twice prisoners rebelled, to be instantly and efficiently paralyzed with a beam from a pistol. In a few seconds the rebellious ones regained consciousness and were able to go on.

The rest of the trip they enjoyed from several small ports. The entire group was penned in a small prison locker with a few guards to watch them. After some six hours of travel, during which the space liner had been left helplessly behind, and the two Patrol cruisers lost in the blackness of space, one of the men in charge came down and gave them a brief lecture on the experiment in which they were soon to take an unwilling part.

It was nearly twenty-four hours later that they finally approached their destination, a tiny, five-mile world of solid metal, a part of the nickel-steel core of some long vanished planet. Its surface turned swiftly beneath them, flashing around in moments as they watched, a surface made up of great crags and clefts of metal, broken, barren masses of metal.

"Lord—it would be impossible to establish a city on the surface of that top!" exclaimed one of the Patrolmen. "The centrifugal spin there would throw anything off into space."

"How about the inside of it then?" asked one of the guards, smiling at him.

"Inside? Is it inside?" asked Markham in alarmed surprise. "Is it always dark?"

The guard laughed and pointed toward a huge cliff of solid metal. "See that—now it's turned by—but that's where we go in. Even from here, what with that fast rotation, you can't see the entrance. See—the ship's going into an orbit about it, picking up to landing speed, trying to move at the same speed as the ground. When the colony was established, the whole interior was carved out with atomic burners—burned the stuff out into gas, and let it escape. The shell's about half a mile thick. Inside, the centrifugal force gives an acceleration just equal to one earth gravity, we're up to speed, and you can see we have about an earth-weight away from it now. And an artificial sun gives plenty of light."

Indeed, as he spoke, they saw the planetoid consistently above them, and now spinning very, very slowly while the heavens gyrated swiftly about. The sun was flashing in and out of the windows in bewildering streaks of light.

Before them the great metal cliff loomed suddenly. Then they saw a huge black gulf under the glare of the spotlights that lighted it during the momentary "nights" of this spinning world.

Into the great tunnel they sank, and the moment they were within it all sense of spin, of rotation, ceased instantly. It seemed they were following some vast tunnel on Earth, where smooth walls of shining metal reflected their spotlights from crystalline metal surfaces.

Far ahead the light was swallowed in blackness. The ship shot straight on, till gradually a curving wall that bent upward appeared, and around the bend the ship sailed. Then a short upward channel and another long level stretch. Light here now, and the spotlights blinked out. The walls were strung with long, thin daylight gas-glow tubes, and far ahead a ring of such tubes surrounded a gigantic metal door, a huge thing that plugged all the great tube.

As they approached, it swung open its sections, lay

back along the channel, and closed behind them as the ship came to a halt. Ahead was a similar metal door, and now as the rear door shut there was a terrific shrieking roar as air pounded into the lock, the inner door was opening. Now the tube ahead was ablaze with lights, a short horizontal stretch, then an abrupt rise of several hundred feet—and they had entered their weird artificial world.

In amazed wonder the captives stared out of their ports. Outside the metal ground curved gradually up and away till it arched in a mighty curve far above their heads. The metal here was smooth, obviously fused that the world might be air-tight, free of cracks. Plants, grass, a few trees grew about them, and even above them. And yet there was no more sense of motion here than on Earth, though this world spun far faster.

Directly "above" them was the sun. A huge sphere it was, glowing with the brilliant daylight gas-glow, and beside it was a second great sphere, but glowing with the weird blue-green of mercury vapor.

The rays from this sun were rich in ultra-violet, and they were warming, supplying heat and light to this inner world as does our own sun to the earth.

STREETS—metal pavements on which ran swift, streamlined cars equipped with rubber tires. Planes were unknown here, unmanageable in the tricky air currents and the tricky acceleration effects of centrifugal force. Off to the left of the tunnel entrance was a low, squat building built, as all these buildings of this world, of solid nickel-steel, high grade armour plate. The world itself was a gigantic lump of armour plate.

"Power-house," grunted the patrolman. Its aerials, beam projectors and leads told in an instant what its purpose was. Even now a faint, nearly invisible beam could be seen reaching up through the atmosphere to the artificial sun.

Off to the right, half a mile away, lay a group of buildings; and now the captives were driven toward them. A pair of guards were given the special duty of escorting Mr. Markham to his private room. He was not to be used in the experiments, but held for ransom, and as such was lead to the tower rooms, instead of the regular "quarters" as were the others.

Half an hour later Mr. Ezra Markham was complaining volubly. He had been put in a room, a bare metal room, containing only a table, a chair and a bed.

Could he have a pillow-case? He never could sleep without a pillow-case, he had grown so accustomed to one, and it should be silk. And a rug? The metal floor was so cold on his feet. And hot water to shave with? And did they turn out the sun at night? When was night?

The guard on his floor brought the pillow-case, soon discovered his mistake, and ceased to bring other things. The fat and worried Mr. Markham had an insatiable desire for comfort, and had complained bitterly at the tough, linen pillow-slip.

The guard, in self defense, assured him there was a night, that it was two hours distant, it lasted twelve hours, and that the stars could not be seen through half a mile of metal. But, he added, the room lights of the buildings across the world looked like stars.

Then, quite fatigued, he retired permanently to the guard on the floor below, out of range of Mr. Markham's querulous voice.

True to the promise, night closed in with the extinguishing of the "artificial sun."

Mr. Markham had spent the evening gazing out of his narrow, barred window. He was about fifty feet above the ground, and directly beneath his window was a rose bed, growing in imported soil. Beyond that was a path, and then a broad, soft lawn which stretched out some distance to join finally with the sweeping metal ground of this world.

As the great spheres sputtered into darkness, a slow, firm smile spread across the man's face. He turned from the window. Now again those wide shoulders were firmly back. His head rested squarely on the short, powerful neck held boldly erect, an air of ease and enormous agility in his walk. A lightness, almost restraint was in his step.

His hands were working at his face, and in moments bits of wax were taken from his mouth. He worked swiftly at the washstand a moment removing the last traces of the bothersome face coloring, to reveal a lean, tanned face, almost black from the constant exposure to the unshielded sun of space. Next, cumbersome, heavy shoes were removed and the flapping, gaudy clothes. Finally he stood clothed only in a dark, elastic suit, a pair of soft-soled rubber shoes and the dark-green sash and the lavender suspenders, as well as the wrist-watch.

But now with the floppy garments removed any modern man would have recognized his type instantly. The heavy, blocky legs; the short, squat body, tremendously broad of shoulder and deep of chest; the rather long, powerful arms were all typical of the Jovian colonist, Humans who had spent their lives on that huge, heavy planet developed just such blocky legs and heavy arms—and, more, the tremendous speed of motion and agility the burdensome gravity necessitated. Since Jupiter's gravity was two and a half times Earth's, it was now plain why the acceleration of the ship had not bothered him—scarcely more than polar gravity of Jupiter!

His grey eyes were alight with amusement as he thought of the guard his volubility had driven below. Now Donald Barclay, crack lieutenant of the Interplanetary Lane Patrol was safely barred in a room fifty feet above the metal ground in a solid metal building.

Ready now, he strode lightly to the window, and settled his hands firmly on two of the inch-thick steel bars set in sockets, that barred his window. Silently he began to strain, and great muscle sheaths stood out across his back and shoulders. One bar began to bend in, and the other out, and finally he lifted the two bars from their sockets. A moment later he had two more.

HE lay the bars neatly on his bed, and stepped to the window. He stepped across the sill, lowered himself to arm's length outside, then jumped out as far as he could as he let go.

Now the fifty-foot fall would be fairly certain death to most humans. But to a trained Jovian it meant merely a thorough shaking up. Barclay landed heavily but correctly, and in a moment he was on his feet once more, running across the lawn in long, light strides.

But a guard had heard the heavy thump of his landing, and come out to investigate. And despite the dim light from buildings, he saw the shadowy figure running across the lawn and fired at it. The twin fires of his beams immediately revealed him more clearly. A second flash—

the man stumbled—then was suddenly leaping in wild, bouncing flight. The guard stood dumbfounded as he saw the man jump about like a rubber ball—twenty feet into the air—thirty feet in a long leap so swift he could not possibly track it with his beams. The beams were working once more—and the man was running toward him! Now his beam must sweep wider on each of those insanely incredible bounces—

Other guards were coming at his shout—a half dozen of them—and in that instant the shadowy figure was gone!

The others gathered excitedly about him—where—how—what?

None of them even saw the shadow bounce out of a deeper shadow of a rose-bush. He was just suddenly among them, landing in their midst, apparently falling from the other side of the tiny world. And from some other world he was indeed! Half a dozen places at once, bouncing among them, staying among them so they could not beam him, handling the men like children, till in ten seconds they lay stretched out on the metal path and the lawn.

Then Barclay stooped over them an instant, straightened—and was away. But now he carried four of those ray pistols stuck in the deep green sash.

More guards were coming, but they ran to the crumpled bodies. While they strove vainly to wake the men the Jovian had put out, Barclay disappeared in the dimness.

But the alarm was out before he had made half the distance to the power-house—his goal. Would he reach it to hide nearby before the guard there could establish their cordon?

Above the soft thud of his leaping feet he could hear the cries of excited men. Lights were beginning to flash on here and there about the ground of the power-house, shadowy men were running about.

The power-house loomed low, squat before him, a crouching mass against the surrounding darkness. The tiny slits of the windows here and there showed bright streaks, save where the thirty-foot wall about the buildings masked its lower half. The building was enormous—the power plant of a world of science!

Suddenly there was a warning sputter of light about him, like some diffused lightning—the great artificial sun was waking to life as cold tubes were warmed by rapidly warming generators.

Two—one—he was beside the ten-foot thick wall of solid metal that surrounded the power-house. He tensed his muscles, walked back a way limbering once more, then—up-up-up he sailed, his powerful arms outstretched. With a sigh of relief he grasped the edge of the wall and snapped his body over, dropping on the other side to a tree-spotted lawn. Almost simultaneously with his soft landing the great artificial sun came into dim, flickering life. Shouting, calling men were racing across the lawn toward their posts, looking here and there hurriedly—for none would suspect the runaway could have reached this wall and crossed so quickly.

Darting across the lawn, taking advantage of every bit of cover and blessing that winking, sputtering cold light, Don made for the power-house wall.

Then—he was there. His plan was made already. He had seen the enormous steel grille-work door, protected by heavy protolectric guns and knew he would never be able to enter there. He leaped—his fingers caught in a window-frame twenty feet above him. Then his powerful arms snapped him up against the light, Earth gravity to the next window-slit. Like some weird fly he went up the wall in jumps and spurts. Just shy of the low parapet wall of the roof he listened for a moment. To his ears came mingled, muffled cries—the calls of guards below, the stamp of feet, the dull whirr and hum of huge Farrel atomic generators within the power-house's ten-foot metal walls.

But from the roof—no sound. In an instant he was over, and hidden from the rapidly strengthening light of the artificial sun. He started as a muffled, rapidly increasing thump sounded behind him. A snap, a creak, and a trap-door in the roof opened. Barclay dived suddenly for one of the tiny booths at the side of the broad roof. Inside he found the controls of one of the high-power protolectric defense guns.

An instant's observation confirmed his belief—these guns were supplied by the great generators in the power-house itself.

"Clever," he muttered, "if they are captured, they can't be turned against the plant, and nothing smaller could phase these walls."

CHAPTER III

In Control

HE turned now, and saw a score of men on the roof, rapidly heading for the different booths, armoured like his with four-foot steel walls. He drew two of the protolectric pistols, adjusted them quickly for minimum power, and swept their brilliant beams quickly over the men. One after another suddenly jerked to rigidity, then slumped helplessly paralyzed. Before the first had reached the ground, the last was falling.

Barclay turned now to the powerful gun he had captured, and quickly spun it on the ship that had brought them—the only machine on this world powerful enough to break open the power-house.

Two enormous brilliant pipes of blue-green fire leaped out and spattered against the ship. Instantly it was wreathed with an aura of shooting flame from the waste energy of the beams. The four-foot armour of the ship was glowing white-hot in a fraction of a second. In a second it was bellying out in gusts of flaming gas; in five seconds a great hole was gaping in the ship's wall, and already the beams were at work on the great generators of the ship.

Taken by surprise, no effective defense was made till the last moment. Then two great beams shot from the ship, still spread as they had been to disable the *Vega*, and they struck the power-house wall. Instantly, as Barclay saw them swing toward him, he released the controls he had held, leaped to the middle of his tiny booth and stood on his toes. As he had expected there came the flaring corona about every sharp point of metal, the numbing, tingling shock as the current raced through the great building as it had raced through the great passenger liner—and every man in that building was helpless! Paralyzed as the passengers and crew of the *Vega* had been.

But Barclay had been as far as possible from any metal object. His feet were encased in heavy rubber shoes,

and his contact had been so poor that in the instant the ship's beams operated before, his own locked controls had driven their beam through the ship's generators, destroying them and extinguishing the rays. Yet he had not fallen.

For a moment he was numb, his muscles responded poorly, and his motions were jerky. But then he was himself again, and in a moment snapped that beam off. The ship was helpless.

He turned, stooped low, and ran along the parapet wall till he could dive across the intervening space to the trap. In it he went, diving down before any beams could reach him.

He caught a handrail, gripped and steadied himself, and came down the stairway in great leaps. Around him was the shrill whine of huge atomic generators, the dull hum of transformers, the whistle of converters, and the steady thunk-thunk-thunk of the huge air-purifiers that supplied this world with air. Before him, massed around the room's high walls, were the great switchboards, a maze of hopelessly confused signs, meters, wiring and giant switches.

One he spotted directly before him, inch-high letters cried out their message of emergency. "Gates."

"Ah—," Barclay grinned. "How helpful." He pulled the switch below the sign. Instantly there was a shrill, rising hum of powerful motors throughout the building. A moment later came the heavy, ringing clangor as huge gates were shut. The motors stopped automatically, the great ten-foot thick metal slabs in place.

He turned his attention now to the men who lay sprawled about on the floor, their arms and legs spread helplessly as the paralyzing electric current caught them. "How kind of that ship," muttered Barclay, catching up one man in each hand and starting for the lockers. "I never expected a break like that." In five minutes he had the entire crew in the locker room, stripped of weapons, and was ready to give a last look about the room. Then the easily recognized snap and sputter of a beam in action called him. The great main door was being attacked, and already glowed a dull red!

He slammed shut the heavy locker-room door, and ran for the emergency switchboard. He felt sure the outside gun circuits would be controlled here. They were—and just as the inner side of the heavy door began to melt down, the ray was suddenly snapped off as all power was cut from it.

"Whew—that was a bit too close. I'd better make sure of these other things first!" thought Barclay grimly, looking at the heavy door. They'd have to be cut open now—they were welded shut.

Next he investigated the locker-room door, to make certain he wouldn't be attacked. He decided to weld it shut, as the safest way. His hand pistols did that quite quickly. "Now I wonder—they might have a secret, external gate-opening switch.

"If they did—well they won't be able to use it in a little while." Rapidly he dug some metal bars and with his hand pistols welded them solidly across the various gates. He himself could not open them now without first cutting those bars, and that could be done only from the inside.

"Now to give them a little misery!" he smiled as he walked over to the switchboards again. He quickly investigated the various main switchboards, and in ten minutes had unearthed enough information for his purpose. First, the artificial sun was extinguished. Then every power circuit leading out of the plant was cut, save the electromagnetic circuits that held the mass of the artificial sun in place. They wouldn't dare to cut that for power, to do so would bring down the huge spheres of their sun.

OUTSIDE he could hear the mutter and roar of the guards over the hum of the generators. From the locker-room came pounding and roars of rage, the mutter of angry voices.

Barclay grinned, and went up a short flight of stairs to the radio room. He took off his lavender suspenders and the green sash, then he unrolled the sash. In it were a number of lengths of a greenish metal tape. From the suspenders came a number of strands of greenish metal wire. He quickly connected the tapes and the wires together in a very definite plan. Finally, from the heavy buckle of the sash, he extracted a tiny atomic generator, capable of generating several hundred horsepower. Next he took off the thick wrist-watch the stewards of the ship had remarked on, and began prying out several of the gems, as well as the face of the watch. Into the gem-sockets he inserted several leads from the atomic generator and from the greenish metal tapes.

At last he was ready. He now had set up, with the aid of the watch and atomic generator, a very serviceable, highly accurate gravitometer, based on the same principle of space fields as the McKinley space-discs. He proceeded to measure the gravitational fields of Jupiter and the sun, and get their angles.

Finally he set down his data on a slip of paper, gathered his apparatus together and sat down at the huge radio set. In a minute and a half he had the complex apparatus tuned correctly, and ready for transmission.

"Lieutenant Donald Barclay I.L.P. calling Commander Morrison," he repeated four times before his answer came. The receiving disc on his set suddenly glowed with flashing colors, and the image of his Commander appeared before him.

"Inside the planetoid G.C. 2759-h according to my gravitometer readings on sun and Jupiter as follows—J-2 53-45. 51 and S-747 -54.49. At present control power-house. Probably not long—come at once and you may be let in. Lock controls here. If necessary break in, the people will all be killed, but you can bring 'em to life again in ninety percent of the cases anyway—I'll take my chance.

"Data on protolectric gun—," Barclay talked rapidly, telling everything he could about the protolectric gun which he had dis-assembled. Morrison would be here with a dozen Patrol ships in three hours now.

Don went down to the power room. He threaded his way through great masses of high-piled apparatus, great hulking bulks that loomed like weird monsters above him, and purred and growled softly to themselves. The lone-tiny figure of the man strode on through the dim-lighted room.

In his ears echoed the eery music of the great generators humming about him, the sullen mutter of the crowd of men outside, and the mirthless, sodden chuckle of the great air apparatus. Barclay shivered—and wondered.

With sudden resolution he strode hastily to the lock

controls. He drew down the outer lock control to the open position and watched the meter connected to it. Nothing happened. As he had feared, they had an over-control at the locks themselves. That meant that Morrison would have to blast his way in with the slow, atomic disintegrators, boring a shaft through the solid metal by transmuting the metal to some gas that would escape into space. Perhaps as much as a foot a minute—but they'd get there. Then all the air would vanish, and in the twinkling of an eye this would be a frozen, solid world, and every human in it would be a solid, frozen corpse. If they froze quickly enough the doctors would bring them to life again later, but if freezing was too slow, permanent death.

The rumbling noises in this reverberating place was working on even Barclay's iron nerves. Finally he returned to the wireless room and listened to the conversation of the various Patrol ships, even called to Morrison to say he could not work the locks.

He crept out on the roof, once each half hour, and looked carefully down. No signs of any disintegrators, they had no mines here, and no portable disintegrators that could eat through the metal walls.

He was sitting quietly, tensely listening to the banter of one patrol to another so he did not see the thing behind him, nor hear the slight swish as a long sharp knife drove through the supposedly solid three-foot wall at his back. The long slim blade came with the faintest rustle, then a slow swish as it cleaved down the length of a man through the armour-plate wall. A blue-clad arm came through, and opened the slit a bit for a face to peer in. Then, with a rush, a man leaped through the paper-thin metal wall and charged across the room. Behind him came another and another!

Barclay was up, and whirled about in an instant, his taut muscles delighting suddenly in the thrill of action against the solid bodies, instead of the phantoms that had been oppressing his waiting mind. The solid thud of fist on flesh, the heave and wrench that tore the long knife from his attacker's arm, the sudden jerk that threw him headlong down the stair. Then he was bouncing about the room like an animated rubber ball, moving with a speed impossible to these slow terrestrials.

BUT more came—and more! In seconds the room was so crowded he could not dodge, and it was only a question of wrestling, and sheer brute strength—and time. Barclay fought with the strength of five—but there were nearer five score against him. Eventually a stout wooden piece connected with his skull, and he went down.

He came to consciousness in a corner of the room, his wrists and ankles securely bound with wire. Directly before him were the radio-places, with their operators.

"All ships' called in for immediate defense against I.L.P. Secret agent escaped in planet and called Patrol. All speed required. Beware Patrol ships on nearing," droned one after another as he picked up one of the nearly two-score E.R.C. ships.

That would not be so good, decided Barclay. He had to do something more.

He turned, looking about for some means of escape. The wire on his wrists was far too strong to break, even though no one was watching him directly.

He could see the wall that had been his downfall now, it had been hollowed out to a mere shell by the work of a disintegrator. He had locked those men in there with a disintegrator! He hadn't had a chance to search the room, and they had simply set it up and cautiously run a hole through the wall, masked by the noise of the generators.

They hadn't given him any disintegrator, that was obvious. And they had very thoroughly searched him now. He looked about at the hard, smooth floor, and the hard, smooth walls, and the equally hard weld that joined them. His eyes lighted in sudden triumph—for that was not smooth! It was merely puddled metal, with the usual slightly rough surface—than which no more perfect file could be imagined!

Barclay started to work, writhing and complaining. "These wires are cutting off circulation—don't have to pull 'em so tight! I even left you a disintegrator, you might at least keep these from cuttin' my wrists off," he grunted. He moved his body about, trying to ease them.

He gave a little louder grunt—to cover the low snap as the weakened wire broke. He had filed it half through (and felt sure his wrist was half filed through too), but now he was able to work on his ankle wires.

It was nearly a quarter of an hour before he had loosened the stiff, tough wire. Cautiously he wriggled his feet into position.

Then, like some mechanical leaping toy, he was on his feet, and before the dozen or so men in the room could move to stop him he was rushing for the stair head. A man leaped in his path—and flew head over heels backward as a terrific fist caught him on the chest, while a hand like a striking snake's head plucked free his ray pistol.

Barclay leaped—he didn't trouble to use the stair to descend the thirty feet to the floor below. He leaped and darted at once to the great switchboard, running along it while the startled cries of men drowned out the powerful hum of the generators. Running feet behind him—before him—at his side, shouted orders to fire, and cautions to hold fire. He was running in front of irreplaceable control panels, where a ray would mean instant destruction to the planet as the giant powers of the generators would be released explosively.

Men appeared before him like phantoms, and like phantoms disappeared as he seemed to brush them aside. His mind was concentrated on one objective. He found it—pulled a switch. The power-house was suddenly black as every light snapped out.

Instantly his carefully mapped course swung. With a series of leaps he was hidden behind a huge mass of apparatus before the next man could restore the switch, and the daylight tubes came on again.

Barclay was hidden amongst the great mass of apparatus that fed the power to the defense stations on the outer surface of the planet, the huge snaking cables of the protolectric guns. They had to search for him, and they couldn't use their rays, it was too dangerous. But then, neither could Barclay, so they came in after him. It took ten minutes to dislodge him. The men that came after him were promptly and quietly put out of business for half an hour or so. Finally one man coming around one way attracted Barclay's attention, and he was reaching up for him, when an unseen opponent with a ray pistol brought it down on the back of his head.

CHAPTER IV

Approaching Death!

WHEN he regained consciousness this time he was again in the control room, the radio places fully occupied, but he was accorded the honor of a private guard.

"Hmm—what are you, guard of honor?" he asked, smiling at the lean, well-built man watching him.

"Cross hairs," affirmed the latter with a smile. "The way you handle your fists deserves honor, we felt. How'd you saw those wires?"

"Do a better welding job next time and it won't happen," laughed Barclay, pointing to the shiny spot on the wall with his head. "How long have I been dreaming?"

"Long enough for the Patrol to come in sight. Morrison has been in communication with Commander Rogers there, and demanded surrender. Rogers invited him in—if he could make it. Our ships haven't showed up yet, but the outside stations are preparing a warm welcome for the Patrol."

Barclay smiled to himself. "Are they? What weapons?"

"You ought to know—protolectric guns, that's the only power leads you saw wasn't it?"

"Why so centralize your power?" asked the Patrolman.

"Several million dollars cheaper," replied the guard.

"Might have been several lives cheaper no to do so, though."

The guard looked at Barclay sharply. "Why?"

Barclay was starting at the screens on which were depicted the heavens as seen from the outer surface. Stars, planets and the sun were wheeling madly across the sky as the tiny world spun on its axis. On the flashing screens though, Barclay could detect the long, golden form of the Patrol cruisers coming in massed formation. They spread out now as they neared, circling down at thousands of miles an hour.

"Ray station 21-B when in position will fire. As others come into position join action," came the low firm voice of Commander Rogers of the E.R.G. forces.

"To ships," he continued. "Come with all speed, now attacked by I.L.P."

Suddenly station 21-B, as seen on the screen representing that station, sprang into activity. The great twin barrel of the proto-gun swung on its support, then was suddenly clamped to the gyroscopic rest that would hold it aimed at any one point in the rapidly moving heavens. The patrol cruisers came into view on the eastern horizon—and the gun snapped into action. Instantly one of the barrels glowed with the intense ionization—but the other did not react!

"21-B drawing only negative, sir!" sang out the alarmed voice of the meter-man covering that station. Already the next station was in action, as the Patrol came over its horizon. In moments half a dozen stations were in action—and in every one *but one barrel was working—the negative barrel!*

One short day was over, every station out there was already in operation, and the Patrol ships were already glowing dull red on the outer hull from the impact of fast flying electrons. They retreated hastily to a safer distance.

"21-B reports its apparatus will not shut off!" came the alarmed voice of that station's representative.

"Station 20 reports simular trouble, also drawing only negative!" One after another the reports came in. The men turned in astounded wonder to Commander Rogers. He was looking at Barclay.

"As I said, it might have saved several lives to have spent a few millions for decentralized power. As it is, those stations are projecting electrons away from the planet at an enormous rate, and with tremendous velocity, leaving the planet heavily charged positively. Now—"

"Generator stopping apparatus hopelessly wrecked, sir!" reported an attendant from below!

"—since the generators can't be stopped, and couldn't be started again if they could," continued Barclay, as though explaining some abstruse theory, "the charge will continue to build up. The stopping apparatus will be completely repaired in half an hour, but the starting voltages and currents will not be available. To stop the generators means the air apparatus would stop, and we'd suffocate in about an hour."

As he spoke, a faint aura was building up about the pointed metallic objects in the room. It was rapidly increasing, spreading fan-wise from every point. Commander Rogers was looking steadily at him.

"May I suggest, Commander Roberts, that you warn your ships to avoid the planetoid—they'll be attracted, caught in the electric field, and crushed," continued Barclay. "Also, these bonds are most uncomfortable."

"NO!" roared Rogers. "We won't warn those ships away—they could start the generators for us if they get here—and they will!"

"That's just it, if they get anywhere near—they can't help coming here—much to promptly for their good," replied Barclay seriously. He was enjoying himself.

THE patrol cruisers had retreated to a considerable distance. The electric field produced by the tremendously powerful atomic generators was already dangerous, and growing momentarily. Pieces of paper were beginning to act weirdly under the influence of the tremendous fields that already existed. A howling, shrieking wind was building up, and air currents in the room were carrying the impalpable dust into the air, the men began to cough and sneeze. The radio set was functioning poorly, the capacitances tremendously disturbed.

A lightning storm was building up outside the powerhouse, and terrific, reverberating thunder roared through this miniature iron world, echoing and re-echoing in the closed space. Even the men in the room felt the effects, they were noticeably repelled from the walls, even the floor repelled them. The field was building up with tremendous speed.

"And," Barclay reminded Commander Rogers, "the men had better stay away from the generators. Their negative terminals are the only source of electrons on this planet. The voltage will build up to maximum the generators can afford, about 100,000,000 volts isn't it? And then it will remain constant."

Men were already at work on the wrecked stopping apparatus, the huge shunts that could turn the generator coils and their enormous currents into a short-circuit. This would give a polarity reverse kick, halting the disintegration of the atoms. Barclay had fused the apparatus

with his pistol. Already the field growth rate was lessening. The fans of cold fire from every point were lessening, the thunder was gradually diminishing, the generators were working against a greatly increased voltage now.

"Ship 29 reporting—hundred thousand miles to come," reported one of the operators.

"Warn him off—or he'll be wrecked," suggested Barclay.

"Order him on with all speed!" roared Rogers. "And *YOU*—shut up!"

In five minutes the sphere ship was visible as a dot on the screen, rapidly approaching. It seemed to grow with lightning rapidity. "The fool should slow down!" muttered Rogers.

"Ship 29 reports some difficulty—McKinley discs fail to function properly, and he can't slow down."

"If he hits this world, you're going to see a lightning display you never saw the like of before," pointed out Barclay.

The ship was flashing toward them with ever greater speed. It was turning now, struggling to bend its course around the planetoid, but already the great ship was in the clutches of the field. It flashed on, seemed about to skim the surface of the planetoid—

Then they could detect a movement of the entire world! Slight—but enough. The ship collided with a mountain of solid nickel-steel. Instantly there was an enormous blaze of incandescent gas—and then there was neither mountain nor ship—just a spout of gas hurling itself off into space! It shot away from the planetoid as swiftly as the ship had come.

The tiny world seemed to tremble under the concussion of the blow, and then every man felt a sudden swift tingling through him as the electricity stored in his body rushed from it, as it was rushing from his world. And now there broke out the lightning Barclay had prophesied. Terrific stabbing flames reached down out of the atmosphere, snatched at the buildings at every high point. The proto-gun booth outside the window was suddenly wreathed in flame. Then, when the flame was gone, the proto-gun booth with its four-foot steel armour was slumped molten over the wall, like some tired thing. The terrific crashing of the thunder was deafening.

For fully thirty seconds it lasted. Then again it was quiet.

"Better warn the rest of the ships," said Barclay in the hush that followed.

"Ship Fourteen reports powerful electric disturbances from a distance of ten thousand miles."

"Tell ship Fourteen to use no deceleration, and a strong acceleration to one side—she might make an orbit yet. Don't be stubborn, Commander Rogers—there are men on that ship," pleaded Barclay.

"Tell her to circle," said Rogers softly, his voice choking.

The field was increasing no more. Men found their repulsion was so great now that they could not touch the walls of the room, save with considerable effort. With a little jump they could rise feet into the air. It was interesting—but deadly.

"Stopping apparatus repaired, sir," reported a stained mechanic, thrusting his head above the stair-level.

"Asteroid N. G. C. 469 turning in her orbit, approaching us!" called an excited observer. "She's glowing red hot now from the effects of our beams."

"How big?" asked Barclay sharply.

"Quarter of a million tons—metallic," replied his guard.

"TELL Fourteen to lead her—his ship will attract it, and get it in an orbit—if it hits the planet will burst!" Barclay's voice was worried for the first time. "Damn—didn't think of that," he muttered.

"Do it," said Rogers, his voice choked again. "Release the prisoner," he added.

Barclay watched with intense interest. "Call Morrison, ask him to help!" he called. The lone ship was not turning the planetoid enough. "And you might offer to surrender for medical malpractice and use of humans for experimental purpose," he added.

The huge chunk of metal was falling toward them, faster and faster. The lone ship was turning it—gradually, ever so gradually. It could never make it.

Suddenly the Patrol cruisers saw the danger, and they too added their efforts.

The men watched the screens in tense silence. Would that great mass of solid metal strike—or pass? Already the lightnings were playing again, and their roar and rumble came to them over the panic shouts and cries of fear from the people gathered outside. Guards and captives alike were running madly about, streams of humans converging on the great locks that might let them away from this mad world.

Slowly, slowly the great mass was turning, but swiftly, very very swiftly it was coming nearer.

"She'll pass!" cried one, "She'll skim over that peak there—sure!"

"Can't! That's a quarter of a million tons of steel, and only those tiny ships working at it—but they may be able to bring us back!" retorted another gloomily. Most were silent, just watching that struggle of tiny ships and mighty masses and terrific electric fields.

Then—it was over! The enormous boulder of metal skimmed less than fifty feet above a high-rising pinnacle of steel, so close that but for the absolute lack of atmosphere, there must surely have been a flaring arc that would have carried all to death.

The lightnings were fading now, their rumbling thunders diminishing.

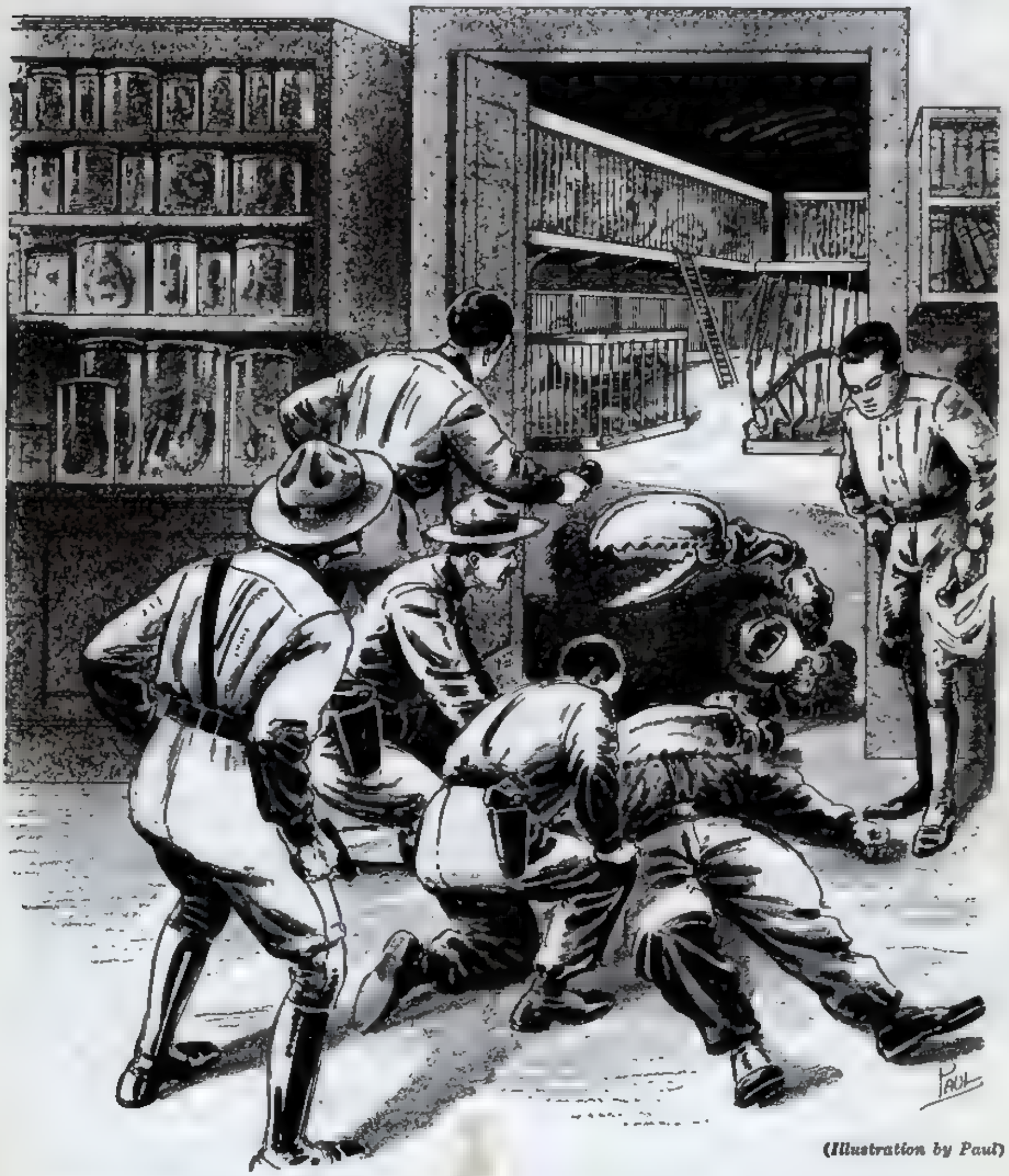
"That's past now, Commander Rogers—but others, and others will come. Commander Morrison has your twin-ray guns, and he can charge his ship similarly, and approach your entrance there without danger—it won't take long to remove the field then."

Commander Rogers seemed to slump, then he turned to the radio men. "Tell Morrison," he ordered in a low voice, "his men are too good for us. We will surrender to a charge of medical malpractice and use of humans for experiments. We have taken no lives."

THE END

THE MAN WHO SHRANK

By George B. Beattie



(*Illustration by Paul*)

Riddled with our bullets, Durston's assailant lay on the floor. It was a full grown male gorilla with the great claws of the giant Japanese crab.

THE MAN WHO SHRANK

by the author of "The Martian Nemesis," "The Murders on the Moonship, etc.

"THE most curious man I have ever met," began Dr. Li Phou Lee, as he passed around his ornate snuff-box, "was James Lombard."

Declining the hospitality of the box, we nevertheless sank deeper into the upholstery for, as members of the "13 Club," we knew how entertaining the criminologist, whose name and work was known throughout the five continents, could be when he waxed reminiscent.

"I met him first at college," continued the doctor. "A big raw-boned youth, with plenty of energy that never seemed to get him anywhere. On the football field he was always knocked cold before he got a smell at the ball; in his studies he was always half a term behind. He was always fooling about with some scientific will-o'-the-wisp, such as perpetual motion, or dimension segregation, with the result that when he went up for his major, (he was studying medicine), he was bowled over ignominiously, and advised by a sarcastic examiner to take up plumbing.

"The remark was an unfortunate one, more particularly as Lombard had lost a couple of fingers on his right hand the previous session, through tampering with a new explosive, and he was quite unfitted for any manual labor on that account. Naturally he was bitter. 'Can you find me the surgeon,' he asked me, 'Who can supply these missing digits? No!' He surveyed his mutilated hand, and gritted his teeth. 'Yet,' he continued satirically, 'The poor downtrodden lobster, that never held a scalpel, nor bled a rich hypochondriac of his dollars, can do the trick.'

"I said nothing, more particularly because I noticed a wild look in his pale grey eyes. His voice increased in volume to a shriek.

"'Fools,' he shouted, shaking his poor fist like a madman, at the great university building. 'You decorate the duds, and jettison the genius. But, *when I have grown my fingers again*, I'll show you, and your one-horse-minded world where you belong.'

"I gave him a loan of a hundred dollars, which I knew was a gift, (Lombard was always hard up), and, mentally placing him as a sure starter for an asylum, took leave of the disappointed candidate.

"In the years that passed, during which, for the most part, I occupied the chair of Scientific Crime Detection, I often found myself thinking of Lombard, and his wild words, and speculating as to whether he would ever return. But I never either saw him or heard of him, and I concluded that like most mediocrities and cranks, he had passed into insignificance, in a world which is too busy to recognize either.

"Indeed, my second meeting with Lombard did not occur until some years after I had vacated my university position for the free-lance criminology by which I now earn my third floor back. I was hunting down a man in the South Seas. Looking for an individual in the thousands of islands and rocks of Oceania, is like looking for a pea on a planet. Obviously, the customary rocket plane was useless; myriads of rocks and coral reefs which might effectually hide a man, formed no landing place for a plane. And while a flying boat might land a mile or so from the shore of these places, there seemed little prospect of getting ashore.

"Accordingly, I used the old-fashioned steamboat, mixing with the scum at the ports of call, picking up a word here and there, until I had my chain of evidence almost complete. Between the Solomons and the Marshall Archipelago, there's a great stretch of open ocean, with but half a dozen islands in a thousand-mile square. At Paanopa, I heard of a couple of uncharted rocks in the heart of this vast expanse. They were known, flatteringly, as the Gates of Hell, and seemed to be chiefly remarkable for a particularly virulent type of boil, (beside which the famous Solomon Island affliction was a mere rash), which affected anyone stepping ashore. For that reason these tiny islets had been avoided like the plague.

"Of late, however, a white man had taken up residence there, accompanied by a number of Kanaka servants, a Portuguese overseer, and a half-caste hangabout. From the several detailed though garbled versions, I had a hunch, as you Americans say, that the latter was my man, and I lost no time in getting under way.

GEORGE B. BEATTIE

SOME of our readers at times have made the assertion that there is nothing new in science fiction.

With this idea in mind, we present a little gem which has at least one novel aspect. There have, of course, been science fiction stories in which the humorous element was outstanding. But this, the present effort, is the first one where the author, in a most delightful manner, slyly digs into the sides of sacred Science Fiction itself.

And while he is doing it, he does not give you much chance to be aware of it except in a vague manner.

It is our sincere opinion that you cannot help but like the remarkable "Li Phou Lee."

"The 'Gates' didn't look so hellish to me, just neat little rocks with a few straggling palms, and the scent of Fucus straggling over to our nostrils in the gusts of wind. As we got nearer, we could see on the larger islet a building. A crazy kind of erection, it yet was solidly built, with great chunks of glistening coral cemented securely by concrete; and seemed to dovetail into a hillock that reared itself up in the middle of the island. On the other rock there was nothing to be seen but a few rude shelters, evidently the Kanak dwellings.

"ROUNDING a bend, we came on a very hive of industry. The handful of Kanakas, with the portly Portuguese, and the half-caste (*my* half-caste, I told myself with quickening breath) supervising, were hard at work erecting a kind of pier. Now, the mahogany-colored South Sea Islander does not hustle for a hobby; he prefers to moon about the beach, admiring the paradise he finds himself in, or fooling about at his own pace, with the giant cane traps with which he catches the multi-colored fish of the tropical waters. But these people worked like demons, apparently quite oblivious of the appearance of the steamer. Indeed, we had already embarked on our surf-boat when the somnolent overseer raised his eyes, started violently, and sent the half-caste at a jog-trot towards the coral-*cum*-concrete palace.

"We had reached the beach when the half-caste reappeared, a big white man in an enormous topee striding alongside him. I had been subconsciously peering at the Kanaka's skin for the dreaded boils, when something in the huge fellow's gait, some familiar twitch of the heel, arrested my attention. In another moment I was clasping the hand, and looking up into the face of James Lombard.

"He looked ten years too old for his years: his lips had grown thin, and his jaw had squared, but there still burned in his eyes, that wild resentful look I had noted the day he was 'ploughed.' The handshake was a long one, *long enough for me to realize, with a sense of the uncanny, that I was clasping a hand as whole and perfect as my own.* I withdrew my hand hurriedly, and took his big fist in mine. Yes, the index finger and the middle finger, which had been severed almost from the knuckles, were now as hale and strong as those of his left hand, without sign of cicatrix or suture at the joints.

" 'By my ancestors!' I ejaculated, 'You have succeeded, then?'

"Lombard shrugged his massive shoulders, and bit off a great hunk of tobacco, which he chewed disgustingly. 'Succeeded?' he growled, 'Is there any special merit in transplanting a living gland from a prawn, on to a human body, and setting up the flow of hormones necessary to make a limb grow again in humans, as it does in crustaceans? Bah, it is not that I am clever, but that the medical faculty is tied down by red-tape and a lack of brains.' And he launched into a long diatribe against the world in general, and doctors in particular.

" 'But you must come back into the world of affairs,' I urged. 'Surely, you cannot think of burying yourself in this boil-ridden inferno, when the world wants you so badly. Think of the inestimable amount of good you, with your discovery, could do.'

" 'Do the world good?' he sneered, 'What have I received at the hands of your world, that I should inconvenience myself, and take myself from my really important studies, to help it? You spoke of boils, yet have you seen one on the bodies of my people? No, you may have seen the weals left by Zela's lash.' And Lombard laughed brutally. 'But, not a boil; yet, before the morning, unless I administer treatment to you, you will be writhing with them, a loathsome mass, from your celestial crown to your elegant big toe, Doctor.' And Lombard held his sides, convulsed with the mental picture.

"I was thoroughly nettled. Despite the miracle I had witnessed, I felt a sullen contempt for the man. 'You're wrong, Lombard,' I said testily, 'By morning, I shall be many leagues away. All I want is your precious Zela, the whip zealot. He's wanted in Auckland for a particularly gruesome killing. Here are my papers.'

"Lombard escorted me to the house, or palace, or whatever it was, and called one of the Kanakas to bring me refreshments, while he pored over the dossier. The room I found myself in was large and pleasant. It was boarded and paneled, a row of large bookcases running the whole length of three of the walls. A typewriter lay on the table, and beside it a vase of blazing hibiscus blossoms. I looked in vain for the retorts and microscopes of the scientist in this room which looked more like an author's study than a super-scientist's den, and had begun to wonder whether Lombard was indulging in a big leg pull, and that the added fingers were artificial after all, when he looked up from the papers and remarked cooly:

" 'I'm afraid you'll have to leave Zela here, old man. You see, *my* need for him is greater than yours.'

" 'But, my dear Lombard, you cannot oppose the law in that manner. Your joke is, if you will pardon me, in rather doubtful taste.'

" 'I don't need a damned Chinaman to teach me politeness,' he retorted wrathfully. 'I've said Zela stops with me, and that's that.'

" 'But my credentials . . .' I continued, trying to deal tactfully with him.

"" 'CREDENTIALS, nothing! My dear doctor, the police description says quite distinctly and emphatically that the man you want has the big toe of his left foot missing, and that three of the front teeth in the lower jaw, an exceptional thing among these fellows, are also missing.'

" 'Well, what of it?' I asked, although a glimmer of what was coming had dawned on me.

"For answer he called out raucously, and Zela ambled into the room, his white teeth flashing as he grinned like a crocodile.

" 'None missing there, Doctor?' queried Lombard, 'Would you like to examine Zela's pedal extremities?'

"But I was already staring hard at the half-caste's left foot, for there, *instead of a toe missing, he had a toe too many.* Growing from the foot were two big toes instead of one. I twisted them and banged them, pulled them this way and that, but they were as firm and natural as though the fellow had been born that way.

" 'You see,' volunteered Lombard, 'I was in a bit of a hurry with Zela, and I made a hash of things. I inserted two glands instead of one thinking to halve the growing time. Unfortunately, the double gland worked in another way.'

"'Then you admit this is my man?'

"'Privately, yes! Judicially, no! How can he be, with two extra toes, and three extra teeth?'

"'But, hang it all, man, why not come out in the open, and testify against the man. After all, it was a brutal affair?'

"'I don't doubt it,' said Lombard absently. 'Zela is rather playful at times.'

"'Playful! Do you realize that he brutally murdered a couple of artistes, the lion tamer and a dwarf of a traveling circus, and then set fire to the tent. There was almost a third victim, but the man recovered, and we were able to secure information about Zela from him.'

"Lombard yawned. 'Forget it. Why not allow me to entertain you for a week or so. I have much to show you.'

"That was just what I desired, though I answered: 'But the boils, Lombard?'

"'Oh, that's all right. You're immune from those now. For the last half hour you've been inhaling an odorless gas which penetrates the whole tissue and renders the subject immune to attack.'

"Then, I believe, I *did* lose the proverbial composure of my ancestors.

"I was not at all sorry to get aboard again, and my sleep was troubled by visions of Lombard standing over me with his scalpel, performing all manner of macabre operations. So many questions rose to my mind, for which I could not find adequate answers that I was in a mental haze. Why was such a murderous cut-throat as Zela so valuable to a research worker like Lombard? Why had he chosen this out of the way spot in the sweltering heat of the equator for his laboratory?

"More mysterious still, how did Lombard contrive to keep his establishment going? He had always been hard up, and had no visible source of adequate income, for the rock was too remote to make copra a paying proposition even if the acreage had been sufficient, which it was not. And, mystery of mysteries, how did he get the Kanakas to shake off their age-old laziness, and work till they literally dropped? The brutality of Zela, and the fat Portuguese seemed a totally inadequate answer.

"My conduct hereafter demonstrates the fundamental divergence between Eastern and Western character. You Western folks are always in a hurry: the oriental has learned that everything comes to him who waits. Instead of filling myself to the brim with indignation, sailing to the nearest port, and pouring a tale of woe concerning Lombard's determination to thwart justice, into official ears, I did nothing of the kind. That course could only have made me look like a lunatic, so I decided to avail myself of the courteous hospitality of my old friend. I acted on the old Chinese principle that if the tree is too tall for one to climb, one can always wait below for the ripe fruit to fall.

CHAPTER II

The Doctor Acts

"NEXT day, I did not mention the subject of the half caste, nor did Lombard display anything but the most gracious hospitality. He *had* much to show me. In a section of the island he had prepared a large apparatus which segregated and concentrated the ultra-violet rays from the sun, and by their means he could grow vegetables in six hours which in the ordinary course would have taken as many months.

"Of course, the idea of using artificially generated ultra-violet rays for the rapid production of flowers for the table was used by an English nobleman as long ago as 1925, but as far as I knew, this method of stealing them from the sun, and focusing them, as it were, was quite original.

"Now, if you have ever been on one of these equatorial islands, you will know that one of their chief characteristics is the steaming, blinding, disease-breeding vapor that clings to them like a shroud; an atmosphere in which the strongest fall down like flies, and the slightest ailment seems immediately to be aggravated into a dangerous malady. Yet on Lombard's island there was no trace of this humidity, even at night; although the neighboring rock on which the Kanakas dwelt was shrouded in it.

"I mentioned the fact to Lombard, who laughed and said it was a poor man who couldn't moderate climatic conditions. He had evolved a kind of gun which emitted high-velocity electrified particles. This he operated during the night, literally clearing a space in the mists and, as it were, pushing them off the island. When I suggested that it would only be Christian charity to provide the other island with a similar device, Lombard said he was neither charitable nor a Christian, and that he could get a new supply of 'slaves' cheaper than another 'gun.'

"My dislike of the man increased, but I remained suave and conciliatory, even to offering him my redoubtable snuff, which offer he refused. Nevertheless he became quite accustomed to the sight of my elegant little box, of which more in due course.

"He allowed me to roam pretty much as I willed over his domain, and apart from the absolute impossibility of the island providing produce of any kind in a sufficiency to make it a commercial proposition, I discovered little. True, in a cove at the East side of the island, I unearthed a rocket plane, with a catapault launching apparatus flimsily covered with foliage. But then, Lombard obviously needed some form of transport. The only other vessel of any description was the long shallow punt with which the Kanakas were transported each evening to their own barren rock by the half-caste, Zela bringing the boat back each night, and taking it over the narrow stretch of sea again in the morning.

"Once I mentioned casually to Lombard the apparent impossibility of maintaining this place and conducting all his experiments unless he had been left a fortune. He looked angrily at me then, I thought, quizzically and not a little fearfully. Finally, he laughed his coarse croaking guffaw, and said with a touch of sinister coldness in his voice: 'A good many of my experiments are quite self-supporting.'

"I tried to draw him, but caught once more the danger signals in his eyes, and rapidly changed the subject. Yet I was more puzzled than ever. The Kanakas were made to work brutally hard, yet none of the work was of a nature to bring grist to Lombard's mill. They were either building, or making harbors: operations that seemed quite futile. The thought of valuable minerals about the island led me to make experiments in that direction, but

the geology of the place soon showed me that the island was as barren in that respect as in any other.

"Lombard did not spend much time with me. As soon as he had allotted the tasks for the day, he would leave the natives to the tender mercies of Zela, and taking the Portuguese with him would disappear into the 'palace.' On more than one occasion, I followed them but always, with the utmost ceremony, Lombard would promptly bow me out again, and recommend me to view some particular novelty on the other side of the island.

"Even when we took a meal or a glass of wine together, it was invariably in the large room adjoining the porch, and when, as I frequently did, I expressed admiration of his palace, and hinted that he must have an enormous amount of room at the back, adjoining the hillock, Lombard never failed to change the subject with suspicious alacrity.

"At the end of the first week, I had to admit that no ripe fruit as yet, had shown tendency to fall, and that, were I to gain any information, I should have to do a little tree shaking on an own account.

"ON the eighth day a Kanaka died. He was cremated with scant ceremony, to the lamentations of his countrymen who believed that his soul as well as his body was burned. Nevertheless, they carried on with their work without a trace of revolt: they were utterly cowed. As I was mooning about the place in the afternoon, I came across the widow of the dead man hard at work on a mat she was making for Lombard from cocoa-fibre. She was huddled up with grief, the tears streaming from her eyes incessantly, but she still worked as though the very devil possessed her. Here, I thought, was an opportunity of doing a bit of tree shaking.

"Nadya, for such was the woman's name, at first seemed too frightened to give me any information, but gradually I pumped a little from her. It was very little. She knew nothing as to the nature of Lombard's work, nor could she tell me what the palace contained. She had been brought here with the others, some months before, with the promise of good pay and an easy time, only to find that they were to replace other serfs who had died through the incessant labor and exposure. Only about half of her companions had, up to now, survived.

"When I asked her why her companions, who were numerically superior, did not rebel or attempt to escape, she looked at me as one does when a little child asks one a particularly silly question, and raised her arms with a gesture of utter helplessness. Who would hope to succeed, she pointed out, against this great white magician with the black heart? Could he not raise luminous spirits from the seas? Had she not seen flowers and fruits grown in a day? Had they not all seen, through the dense deadly mist that enwrapped their nightly dwellings, the dire gigantic spirits of evil, the great flashes of green and purple he could conjure up at will?

"I could not hope to explain that all these things were caused naturally, or that the terrible flashing spirits were simply the electronic streams from Lombard's weather gun. I took another course. From my pocket, I took my midget radio, tuning in at random.

"'Behold,' I murmured, 'I am a greater magician than even he, but the spirits I summon are for good.'

"It was a Japanese station giving a weather forecast, but that made no matter; the spirit had spoken, and I could see that Nadya had taken new hope. I instructed her to keep her eyes open, and assured her that soon I would have her companions and herself liberated.

"She purred like a contented cat, but when I put the radio away, cried out for a charm to ward off the evil wrought by the white master. As I could hardly spare the radio, I fished in my pocket and gave her the first thing I came across. She clasped it to her, alternately sobbing and laughing hysterically.

"Next morning I was astir bright and early. A little too bright and early, perhaps, for I managed to witness the tail-end of a brutal flogging, the flogging of Nadya. Our conversation evidently had taken up some of her time, and her task had not been completed.

"Here again, you Western gentlemen would have been impetuous, would have rushed in and socked the half-caste on the nose and so on. I did nothing of the kind, partly because I should have ruined my whole plan, and partly because, despite the severity of the blows, the Kanak woman felt little of them, such was her faith in my charm, which she clutched tightly to her. Instead, I strode into Lombard's den, and complimented him upon his talents as a disciplinarian.

"I piled on the butter, speaking flatteringly of all I had seen, meanwhile offering him casually and unostentatiously, my snuff-box which offer I knew he would refuse.

"'Yes, Doctor,' he boasted as he made himself comfortable, 'You must admit that my servant has been saved from hanging by a masterly stroke. I, and I alone in the whole world, have the means to grow a limb again, once it has been severed, and if I withhold my testimony, you will never convict Zela.'

"'Then you've quite determined *not* to give that testimony?' Lombard nodded his head. 'Quite. He is worth more alive to me, than dead to the State. Besides,' he continued with a twisted smile, 'It was in my service that he committed the murders at Auckland, for which you want him.'

"I put my snuff-box away, bowed ceremoniously, thanked him for his generous hospitality, and took my leave. My oriental impassivity was having a rather hard struggle, for . . . I had a dictaphone record of that damning confession on my person. A snuff-box may not be so innocent as it appears.

"ONCE under way, as you may guess, I lost no time in sending a radio message in code to the Brisbane headquarters. In turn they instructed the regular flying boat service pilot to pick me up on the following day, and before long I was telling my amazing tale, and demonstrating my miniature but condemnatory dictaphone record to the local heads of the International C.I.D. at Brisbane. At first they scoffed at the authenticity of my evidence, and I believe only the eminence of my name in my particular field caused them to act at all. When they did act, it was with leaden feet. I was most anxious to complete the capture, but they seemed to think I should throw myself wholeheartedly into a round of dinners and social functions, while they very leisurely quibbled with headquarters over the necessary papers.

"In this way a period of ten days was wasted. Then, when everything at length was in order, I found that, in place of the speedy flying boat, carrying the necessary surf boats I had expected to be provided for me, I was

to make the journey by motor launch. All, forsooth, because the official who was to accompany me was liable to be afflicted with air-sickness. Deeply chagrined though I was, I had no option but to fall in with the plan, although I feared for the safety of the Kanakas, as well as the possibility of my quarry escaping, when my whole story would be discredited.

"However, three weeks to the day after leaving the 'Gates of Hell,' we sighted them once more in the horizon. It was late in the afternoon, and before we had reached the outer lagoon, night had fallen with that pitchy sudden 'plop' so characteristic of the tropics. We lay to for the night. I peered keenly through the darkness in the direction in which the islets lay, but could see nothing of the purple and green flares from Lombard's weather machine. A cold doubt assailed me. Had he weighed matters up, and decided to bolt with his scum? It almost looked like it, for despite the blackness of the night, one could see that the rocks were swathed in that dense lethal mist, *both* of them.

"Next morning we made a bee-line for the beach. The shallow draught of our vessel enabled us to get right in without the aid of a surf-boat. We were well armed, all four. Larkin, of the C.I.D., whose air-sickness had made such a hash of things, was not overblessed from the collar upwards, but he was strong and courageous, simply spoiling for a scrap. Dr. Hutton, a friendly medico who had insisted on accompanying us, loved adventure and whiskey; while Durston, the pilot, had arms like hams, and a punch like a temperamental broncho. So, taken altogether, if we met with any resistance, we looked quite capable of meeting it successfully.

"As we came round the bend, the crazy lines of the palace were quickly discernible. So too, was the uncompleted pier, but no group of hard-driven Kanak slaves worked on it, nor was the greasy Portuguese or his vile lieutenant to be seen. Although the sun was already pouring down considerable heat, wisps of the white mist still hung about the island, and the walls of the 'palace' were dripping with moisture. The long shallow punt for the use of the Kanakas was nowhere to be seen, although it had, during the day, invariably been drawn up on the beach, close to the harbor.

"We were about to stride into the palace, when a sudden turn struck me dumb. To the west of the building, where, perviously a few struggling palms had existed, and where Lombard grew his high-pressure peas and cabbages, a veritable jungle flourished. Long lush grasses, many feet high wound themselves round many colored cacti. Other noisome-looking growths, with tendrils swollen like over-fed pigs, straggled among the rest, while slime-exuding lianas crept almost to the palace door.

"To explore that side of the rock was impossible. It would take a day to hack through that dense jungle, to say nothing of the unpleasantness of the task. We turned instead, to the East, in the direction of the cove in which the catapault was hidden. Everything here seemed as before, with the sole exception of the flying boat which had gone.

Clearly Lombard had deserted the 'Gates of Hell.' The mushroom forest was easily explainable. The weather gun, without his guidance, had ceased to function, and the dense mists had supplied the moisture necessary for these vile tropical weed-growths to flourish. The ultra-violet machine which, being automatic, had continued to operate, had done the rest.

"I was still anxious to find what the 'magician's' palace contained, and the others were by now fairly tingling with excitement, so we made our way rapidly to the door, with revolvers drawn. To our astonishment, we found the massive door ajar. We passed through the porch, and into the lofty panelled room I knew so well. Everything was in order: flowers, typewriter, books and furnishing. Everything, that is, except for one trifling particular:—*the body of a man lay sprawled across the table. That man was James Lombard.*

CHAPTER III

Unbelievable Events

"YES, Lombard was dead all right. Had, *prima facie*, been dead for some days, for, evidently he had been entering up an item in his diary, and the last date was that of more than a week ago. There was no sign of decomposition however. Under the most favorable circumstances, this would have been exceptional. But here, on the very line, with the white mists of the night shrouding the body, it was miraculous. We laid the body on the floor, and, as we did so, *I caught my breath. Lombard had been a huge fellow, six feet two in height at the least. This dead man was little more than five feet in height, but he was monstrously heavy.* As my previous reports on this case had given me a reputation which Ananias might have envied, I nevertheless said nothing to my compatriots, as none of them had seen the late lamented in life. I measured his height as accurately as I could, and noted that his clothing fell in great folds about him.

"Dr. Hutton was equally concerned and puzzled. 'While I wadna hesitate tae give a certificate stating that cardiac failure was the cause o' the budy's demise,' he chanted, more to himself than the rest of us, 'I have never seen a budy in which *rigor mortis* hasna been evident before, an' I tell ye, there's an uncanny warmth aboot it that is maist unexplicable.'

"Larkin had been examining the diary. 'You are quite convinced it was a natural death?' he inquired abruptly.

" 'Oh aye,' asserted Dr. Hutton, 'What else?'

" 'Nothing,' answered Larkin, 'Except for the fact that the deceased was murdered. How else can you explain *this* entry?'

"We eagerly scanned the page. Apart from the dates, the diary was written in a curious code of runic characters, but the final entry concluded with a shaky scrawl, written obviously in agony. 'He's got me,' the first three words of this passage were all that was legible although there was plenty more of it, the writhing attempts to form letters having continued even after the ink on the pen had given out.

" 'The thing's simple,' said Larkin. 'Your Kanaka friends have risen in revolt and given him what was coming to him a little in advance. No doubt we'll find the bodies of his Portuguese protege, and your villainous half-caste in the undergrowth.'

" 'I dinna ken,' put in Dr. Hutton, 'A Kanaka canna be expected to navigate a flying boat. It seems probable tae me that the Portuguese an' Dr. Lee's quarry killed the mannie, an' made off, an' the Kanakas took to sea in the punt, puir buddies.'

"'That, too, seems to me to be improbable,' I ventured. 'If Lombard were dead, and the overseers flown, the Kanakas would have no reason for flight. One island is very much the same as another to them, and they would certainly have preferred to stay here than take a chance in a small boat across hundreds of miles of shark-infested ——'

"'I wish you gentlemen would remember I am in charge,' grunted Larkin. 'You can stick to your theories. I intend to track down the Kanakas.'

"The C.I.D. man would have had buried Lombard right away, after a most superficial examination which revealed nothing, and re-embarked right away to chase the Kanakas without further exploration of the palace. We persuaded him, instead, to radio all the island stations from the Gilberts to New Hanover, in an endeavor to find whether the missing Kanakas had been picked up at sea, or sighted by a passing plane.

"While the others were arguing, I was working unhampered. Two discoveries of the utmost importance fell to me. I noticed some minute brown stains on the carpet, just in front of the chair on which Lombard had been sitting. On Lombard's trousers, a few inches from the bottom of the right leg, a similar stain appeared. On the leg itself, just above the boot, a tiny puncture surrounded by a halo of the same brown color was clearly discernible.

"The second discovery was more startling. The floor was polished with a waxy material. Hence, any article standing upon the carpet made a definite dull impression on the polished floor below, if it had weight enough. On turning up the carpet at the spot where Lombard had been sitting, impressions of bare feet very vividly marked could be seen. Nothing funny about that, you say, with so many natives knocking about! Perhaps not, *but these footprints measured little over an inch in length.*

"My studies were interrupted by a low whistle from Dr. Hutton, and I looked up to see him gazing at the corpse with an awed and ashen countenance. He clutched my arm.

"'FOR thirty years have I been a strict follower o' the kirk,' said the Scot in a low tone. 'But, dang me, if your mannie,' he pointed to Lombard, 'is not shrinkin' before oor very eyes. When we left him, his heid was not an inch from the bookshelves, an' noo it's more than twa.'

"'Stuff and nonsense!' barked Larkin, 'You've been at the whiskey again, Doctor.'

"'It may be entertaining, and not altogether irrelevant,' I interposed, 'To inform you gentlemen that in life, the late Mr. Lombard was well over six feet in height.'

"'Why the blazes did you not say so before?' demanded Larkin, 'It's important.'

"'Because I did not desire to be called, politely, a liar. This shrinkage of the dead man is uncanny, but not unprecedented. Consider how the Honduras head-hunters reduce the size of a human head to that of an orange.'

"'But,' demurred Dr. Hutton, 'They boil the heids for days in leguminous seeds. This man's shrinkin' wi' nae treatment whatever.'

"'Then,' I continued, 'There is the strange and secret practice of the Jirvano Indians. By an art which no white man has ever been able to probe into, they can reduce and mumify their dead, until a man may hold his grandfather in the palm of his hand. I myself have handled one of these mummified miniatures, not more than six inches in height, yet perfect in form as though the living man had never exceeded that stature.'

"'That proves my case,' claimed Larkin, 'It's these damned natives who have done it.'

"I shook my head, and went on with my investigations.

"The most curious feature of this room was that it appeared to be entirely self-contained, yet we knew that half a dozen similar chambers could have easily been housed in the palace, beyond its bookshelves. I was examining some curious marks on one of the bookcases, when the whole case swivelled round, knocking against me violently.

"Recovering from the shock, I found a steel door fitted with a combination lock, now exposed, with the bookcase swung to the side, and held by a spring catch. We spent the rest of the day wrestling with that door, but were forced to leave it unopened and make our way back to the launch as the night mists descended.

"Next morning, with the exception of myself, the party was in a most uncomfortable plight. From head to foot Larkin, the Doctor, and the navigator were covered with large pussy boils, and none of them could move an inch without enduring the utmost pain. I had to waste the best part of the day attempting to unearth Lombard's odorless antidote. After tearing up half the floor in a search for gas cylinders, I found the stuff was generated in the flower vase on the table, and was operated by a simple push-button. Within half an hour of administering the gas my friends were fairly comfortable, although craters were left in their flesh which took months to heal. I also bethought myself to put Lombard's weather machine in action again.

"It was late afternoon before I completed these tasks, and, as I made my way down to my convalescing companions, I was surprised to see a large Australian flying-boat lying to, and, in a very few moments we were talking with its breezy pilot. He had been sent with the Kanakas as cargo. They had been picked up from the punt, almost *in extremis*, by a tramp steamer, and had been nabbed on disembarkation. At first they had cried in terror at the thought of being taken back to the Gates of Hell, but one, a woman, had calmed them, and spoken of some mystic talesman she possessed which would guard them from evil, at which they became sullen and saucy and, as the bluff pilot put it, a 'Helluva handful.'

"Larkin wasted no time in getting them ashore. When the poor wretches beheld the green and purple sparks of Lombard's weather gun, they cringed a little but, led by Nadya, who still clasped my charm to her breast, they advanced and threw themselves at my feet, hailing me as 'Great Magician' and 'Deliverer'.

"'Suppose you know why I've brought you here,' began Larkin, 'Your late master is dead . . . '

"The end of the sentence was drowned in the Kanaka equivalent of 'three hearty cheers.' When the C.I.D. man started a mild third degree, however, they denied all knowledge of the killing. Spurred on by my talesman, they had swum across the shark-saturated channel in the dead of night, stolen the punt, and with what scant provisions and water they could come by, had set out for pastures new. Lombard himself had followed them in the flying boat and tried to sink them by dropping bombs, but the charm worked, and he was unable to hit them.

As they neared the regular steamship lanes, he gave up the attempt and turned tail.

"THIS lucid account did not satisfy Larkin. He was convinced that the Kanakas were guilty, and this charm business was, to his mind, further proof of that guilt. 'Line 'em up, Doctor Lee,' he commanded, 'And see what you can do by oriental methods.'

" 'Whether he expected me to cut off an ear or two, I don't know; but I adopted a gentler though subtler scheme. Taking a handful of soda straws, I reminded the natives of my proven powers as a magician, and gave each man a straw, pointing out that each was of simular length. I made them hold the straws behind their backs for a period of two minutes, stating that I knew one of them was the murderer, and that the spirits would cause his straw to grow longer, the length of a finger longer, while he held it.

"Now it was pretty obvious to me that if the murderer *was* in the group, I should receive back a straw which had had a finger-length broken off it, to counteract the spirits' elongatory process. The straws, however, were returned as they had been given out.

"That did not suffice Larkin. 'Simply proves,' he said, 'That we have a cunning dog, that doesn't set much store on spirits, to deal with.'

"We had placed Lombard on a croal slab. He was still shrinking, more rapidly now than ever. In fact he was barely four feet in length, yet the body was preserving all its proportions wonderfully, and was still quite free from any trace of decomposition.

"What lay at the other side of the steel door was still an unsolved mystery. We were cadging a few tools from the pilot, when Nadya, who had taken in the gist of our confabulation, rushed up to me, and declared that she knew how to open the door. Obeying my behest to keep her eyes open, she had spied on Lombard and the Portuguese, and seen them open it.

"It was with difficulty, however, that we persuaded her to work the combination. The place beyond was full of evil spirits, she said, she had heard them wailing when Lombard opened the door. Finally, agreeing to our urgency, she operated the lock, turning the dial with one hand, and clutching tight my charm with the other. Slowly she turned it, spelling out the letters J-I-R-V-A-N-O.

" 'My God!' cried Larkin, 'The man had a premonition.' I smiled. Things were becoming much clearer to me now.

"The door swung open noiselessly, and a faint whimpering sound came to our ears. A switch flooded the place with light and, as we advanced, we found ourselves in a wonderfully complete laboratory. Almost every conceivable reagent and apparatus for chemical or biological study was there, while arranged neatly in a little rack were rows and rows of tiny vials all containing potent extractions from the organs of internal secretion;—*epinephrin* from chromatin tissue*, pituitrin from the *hypophysis cerebri,*** *thyroxin* from the thyroid gland, and a host of others that were quite unknown to me, but which all represented powerful potted hormones.

"By their side was a bunch of hypodermic syringes, varying in size from that of a grease gun, to almost microscopic proportions. I noticed that there was an empty space in the rack.

*Adrenalin from the material that makes up the cell nucleus.
**A gland at the base of the brain.

"To the left, we found a full-blown operating theatre, and to the right a surgical library. On the table a copy of Voronoff's *Rejuvenation by Grafting* nestled against a well-thumbed copy of *Ye Olde Recipes for the Production of Authentic Freaks.* Yet the thing that interested me most was a Latin volume, lying open at a chapter headed *Nanus et Pumilo.* It formed another link in my theory.

"By now the wailing within had increased. A door stood straight in our path. It was not such a formidable affair as the other, although constructed of a stout oak. Durston put his shoulder to it with a good deal of confidence. It was not until he had well nigh exhausted all of even his immense strength that the lock yielded, however, and he fell forward as the door burst open. A horrible animal stench diffused into the room, and the groans and wails increased in volume. Durston was regaining his feet, when he let out a scream of terror. It was too dark to see what was taking place beyond, but something hazy flashed towards him. A sickening crunching sound followed. We poured a stream of bullets into the wraith-like gray form, until it fell with a crash to the ground. Someone had produced a flash-lamp, and we dragged Durston out by the legs. Something had hold of his head, something we could not dislodge. More lights were brought, and there we beheld the most sickening and at the same time the most strange sight I have ever seen.

"Riddled with our bullets, Durston's assailant lay on the floor. It was a full grown male gorilla, with great hairy arms and massive chest, *but* instead of the usual ape's paws, the beast had the great claws of the giant Japanese crab. The poor navigator was beyond help. His head had been crushed and broken by the immense nippers, like a walnut in a nut-cracker.

CHAPTER IV

The Explanation

"FLOODING the place with light, we advanced cautiously. The place was nothing more nor less than a menagerie; but what a menagerie! Dogs with cat's tails, lizards with bird's wings, monkeys with tremendous ears and dozens of legs like great spiders. There were snakes with three heads, parrots as small as humming birds, and bees as big as bats. A tiny tiger, no bigger than a kitten, was breathing its last in the corner of one cage, while a mouse that might have been mistaken for a bear, lay dead in the next one. An ordinary garden tortoise scampered about, as though it were an antelope, while an authentic king cobra no thicker than a lead pencil hissed malevolently.

"The warm-blooded animals were nearly all dead or at their last gasp, for want of nourishment, but the freak reptiles were in good trim. Only two of the cages or cases were empty. One was a strong affair with bars an inch thick and had undoubtedly housed the gorilla. Many of the bars had been twisted and bent by the famished freak, as it made its escape, even as a hurricane bends a reed. The other cage was a smaller affair, fitted with a padlock which hung open in its hook. In one corner I spotted an empty sardine tin. It all squared with my theory.

"The shock of Durston's death hung upon us like a pall. 'What I cannot understand,' shuddered Larkin, 'Is

why Lombard gathered all these creatures about him.'

"'He didn't *gather* them,' I replied, surprised at the man's stupidity, 'He *manufactured* them. Possessing many strange glandular concentrates he has produced these freaks from normal animals. By making use of pituitary hormones, he no doubt produced such things as the giant mouse, while others of his extracts are designed to inhibit internal secretion and so retard growth. The ape with the crab's claws, and the dog with the cat's tail are simply examples of grafting.'

"'But why the devil did he do it?' demanded Larkin. 'Just for the sordid purpose of making a living and helping to pay for his other, more grandoise experiments,' I replied. 'He sold these things to side-shows and circus proprietors. That's where the Portuguese and Zela, and the flying boat came in. You know, yourself, that there has, of late, been a great increase in the number of horrifying freaks down in your own country: so much so that Australia has considered restrictive legislature! And, if I mistake not, Lombard's activities in this direction were world-wide.'

"'What a horrible idea!' exclaimed Dr. Hutton piously.

"'And not even an original one,' I supplemented. 'Have you ever heard of the old Spanish *comprachicos*, a society which seized or bought children, and by prosthetic surgery transformed them into freaks for exhibition, grafting perhaps a rat's tail to a child's nose, or twisting its head round so that it would look permanently over the shoulder?'

"'The beasts!' cried Dr. Hutton, 'By God, Lee, that sma' footprint, ye dinna think Lombard . . . ?'

"'Hardly,' I reassured the shocked Scot, 'That print, as you know, would be far too small for even a new born baby. Contain yourself a little longer: the mystery is almost over.'

"We drenched the body of poor Durston with carbolic, and buried him on the beach as the dawn was breaking. I glanced at the mummified form of Lombard: it was now a bare three feet in length. Then, in spite of the other's protests, I insisted on taking a meal in Lombard's state-room, or lying-in-state room.

"Never was there such a clumsy eater. I let pieces of meal fall on the floor, spilt the milk all over the place and, when I finally arose, the twelve baskets of fragments could almost have been gathered without difficulty.

"Then, hastily I gathered together my companions, and we concealed ourselves, as the morning light began to pour into the room, behind the great door. With every nerve under tension and every muscle taut, each one of us stared straight in front. My own eyes were riveted on the farther bookcase. Quietly, and ever so gradually something was moving some of the books. Two red-bound tomes on the left hand side of the second row were slowly separating. A gap of an inch had already appeared, and it was widening every second.

"Then Doctor Hutton gave a vivid start, and would have cried out had I not anticipated him, and clapped my hand over his mouth. As he confessed afterwards his heart seemed to arrest its motion, his eyes stared out of his head, unbelievingly, and he felt his hands clutching and unclutching without volition.

"CERTAINLY the creature emerging surreptitiously from the dark gap between the books, was strange enough to make even me lose something of my oriental complacency, even although I had anticipated something of the sort. Fascinated, we saw a tiny head thrust timidly forward. It was a human head, without a doubt; a man's head, with long black hair, and an unkempt beard, *but undoubtedly a man's head, and a white man's head at that. Yet it was a head no larger than a rat's.* A little arm, naked and hairy, was thrust around the books, and then, by degrees the whole miniature frame emerged stealthily from the hiding place.

"Even *I* blinked incredibly. Clad only in a loin cloth, the dwarf could not have been more than eight inches in height. He was rather broad in proportion, but his bones showed through his skin, which was as white as Larkin's. The lilliput slithered cautiously down from the shelves, and treading warily made his way across the floor towards the food I had dropped, which he commenced to devour ravenously. At a signal from me we descended upon him. He swerved and dodged, fought and bit like a demon, finally producing, from the folds of his loin-cloth, a miniature hypodermic which he flourished angrily, brandishing it like a club. In the end, Larkin managed to get him gripped round the waist in his great fist, and we soon had him trussed up.

"Securely held, the little fellow's struggles gradually abated, and he finally broke into a fit of hysterical sobbing.

"'Yes, I keel 'eem,' he gasped out at length, 'I keel 'eem with 'is own medicine, even as 'e keel my good friend in Auckland, an' 'ow 'e make me suffair too.' Then he fainted away.

"'You do not seem very surprised, Dr. Lee,' commented Larkin.

"'Quite frankly,' I replied, 'I am not, at least not greatly. I had already had evidence that the creation of a super-dwarf by artificial means was something of a fixed idea with Lombard. That he used the word 'Jirvano' to open his combination lock was evidence that he knew all about the practice of these Indians, but I knew that Lombard was not the kind of chap to be satisfied with a *dead* dwarf. I had already had evidence of what he could do with living tissue.

"'Then again, you would notice that the book in the laboratory library was opened at a discourse on *Nanus et Pumilo*. The Romans recognized two kinds of dwarf, *nanus*, the natural, and *pumilo*, the artificial, and the book contained some horrible methods supposed to produce the latter. The other book on *Authentic Freaks* was also open at a page on the creation of dwarfs synthetically, and dealt with some old English recipes, among them being the advice to anoint children's backs with the grease of dormice and bats to prevent them from growing. Of course, Lombard didn't credit that tosh, but it shows the fixity of the idea.'

"'But, hang it all, man, you don't mean to tell me that the man invented something which starved the glands and set up such a flow of anti-hormones that the human body could be reduced in that manner?'

"'I am not sure,' I answered Larkin slowly. 'You have the evidence lying before you. I think, however, that something more powerful was used. You know, of course, that we all consist of atoms, and that these atoms are made up of still smaller particles, separated by comparatively wide expanses of space. Very well, Lombard in my opinion produced a substance which, injected into a body,

caused the electrons and protons to be drawn tighter together or, if you prefer to say so, the space around them to be reduced. No doubt, such treatment would give rise to indescribable pain.

" 'In support of my theory, consider the tremendous weight of this little fellow, he must be getting on for eighty pounds in weight. This super-weight accounts for the clearness of the footprints. Also, although Lombard's dead body is diminishing in size hourly, it does not lose weight. Space alone is being annihilated.'

"Under Dr. Hutton's treatment, the little 'cobold' was now sleeping peacefully. I continued my recital.

" 'When I found the sardine tin in the smaller of the two empty cages, I knew for a certainty that Lombard had had some kind of human being incarcerated in his menagerie. The lower animals do not open cans. Furthermore, they do not abstract the wire can-opener from the tin, and twist it into such shape that they can pick the padlock of their cages. An examination of the padlock revealed to me that the orthodox key had not been used. When our dwarf produced the hypodermic which was missing from the laboratory the chain of evidence was complete.'

"WHEN our dwarf recovered consciousness, and we had put him at ease, he told us his story at length, and so enabled us to fill in the gaps.

" 'Me, Jacquot Pascal,' he informed me. *'Grand*, you say, midget performer du vaudeville, *autrefois*. *J'ai* . . . as you say, tree feet an' a buttonhole mooch tall, I do treecks, joomp ze 'oop, swallow ze sword, escape from ze 'andcoofs. *Mon* audience, zey like it mooch, an' clap, *encore, encore.*'

"It was curious to see the effigy gesticulate wildly, as excitedly he went through his one-time performance in dumb show.

" '*Alors*, one night, at Auckland, in ze grand circoos, when I 'ad feenish *mon* . . . ah, you say . . . act, I go to *mon* tent. I change. I 'av *mon* suppaire of *les petits gris* . . . you call . . . ah . . . snails? A man coom in, 'e ees a uglee man, with sallow skeen. I ash heem wot 'e want. 'E not ansair. *alors, quelle horreur*, 'e 'old smelly cloth to *mon* nose: I faint. When I coom to, a leetle, I find I am in cage, an' *mon* good friend, Sombari, ze lion man, ees lying on ze floor, an' ze orrible 'alf-caste ees stabbing heem again and again. I cry out, boot no one 'ear. 'E drag out ze cage with me in it.

" 'Then ze swine, 'e set fire to ze tent. A man coom. They fight. Ze new man, 'e 'it ze 'alf-caste peeg in ze mouth, and knock soom teeth out, boot ze 'alf-caste stab heem an' throw 'eem in some bushes. *Alors*, zey 'oosle me, ze 'alf-caste, an' another beeg fat man from ze circoos, into a car, an' down to ze sea, into a flying-boat, an' breeng me 'ere to ze grand peeg, Lombard.

" 'E shoot me oop with ze 'orrible animals. Every day, 'e take me out an' use syringe, at first ver' leetle droop of stoof, then more an' more. I suffaire pain, 'orrible. Everything seem to get beeger an' beeger around me. *Alors*, one day, I escape. I find ze syringe all ready *avec* ze dose. It is a beeg dose, beeger than ever. I take it. I steal into ze room: ze peeg ees writin'. I not know what I do. Only I think I make heem suffaire as 'e make me. I advance. I poosh ze needle in hees leg. 'E cry out, *alors* 'e fall forward. I am glad. I hide in ze books. Ze 'alf-caste coom in, 'e whistle, an' fetch fat man. Him dead, both say. *Alors*, say 'better quit'. I live 'ere, getting wot food I can, boot cannot find mooch, everything so beeg. You coom, an' I again 'ide.'

" 'I think,' said Dr. Hutton, quietly, 'Lombard has been dealt oot poetic justice. Of coorse, it's easy tae see that the big dose the wee mannie has spoken aboot, wad easy have been assimilated by his body as it had been gradually led up to, but as Lombard had no had ony preparation, it killed him instantly, although it continued tae dae it's wark, after death.'

"That was certain true, for as we looked instinctively at Lombard, we saw now that he was not more than twice the size of our living *pumilo*. I should much have liked to confiscate the corpse for my museum, but, in deference to the wishes of the others, we gave it what they were pleased to term Christian burial. Instead, I took the living dwarf."

* * * *

Dr. Li Phou Lee put away his snuff-box: an indication that the entertainment was at an end, but there was much we wanted to ask him.

"Have you still got the little man?" asked Blake.

"What happened to the Kanakas?" demanded Tompkins.

The Doctor rose, and moved slowly towards the window. "Strictly in rotation, my friends," he requested. "You see my chaffeur, Jim, down there at the corner of the next block?"

"That husky six-footer?" asked Schultz, a new member.

"That's right. Well, that's the original Jacquot. You see, it's a poor rule that won't work both ways and, as I am something of a scientist, I took possession of all Lombard's extracts, and *by pineal injections gradually brought the little fellow not only back to his normal size, but almost to double what he had ever been.* As for the Kanakas, we cleaned up the 'Gates of Hell,' kept Lombard's weather machine going, and made full use of the intensive cultivation plant. Now they live in a veritable paradise, and a profitable one at that, as they can produce certain rare fruits and rush them to the markets at times when no one else can obtain them. The half-caste and the Portuguese escaped me, but they did not escape a wider net. Read this clipping."

Sydney, Monday.

Our Palmerston correspondent informs us that an airman, flying from Derby to Perth, came across a derelict flying boat in one of the most desolate zones of the great sandy desert. Apart from damaged floats, the machine was in good condition, but the petrol tank was dry. Tracks in the sand led the airman to investigate further, and at a distance of a few miles he found the skeletons of two men. There was nothing to identify the men, who had been wandering in circles among the dunes until thirst and exposure overcame them, but the lesser skeleton showed clearly that its owner possessed two big toes on the left foot.

Dr. Li Phou Lee buttoned up his coat, and prepared to bid us adieu. I hastily caught his arm.

"There's just one other point, Doctor. What was the wonderful talesman you gave to Nadya?"

The doctor smiled. "Ah, yes, I had forgotten. Here is one exactly like it," he said, and he handed me a small disc, making for the door as he did so.

It was a soft-drink crown-cap, with the lithographed legend, "TWO CENTS DEPOSIT ON THIS BOTTLE."

THE END

THE FINAL WAR

By Carl W. Spohr

(*Illustration by Paul*)

There was a tremendous white flash in the valley, framed by a blue rim of electric radiance; and a black crater yawned where a tank battalion had been.

THE FINAL WAR

What Has Gone Before

JOHN BURKE and Fred Young are students at Irontown College in the 21st century. They go to the metropolis, Liberty, to attend a peace demonstration. Suddenly war is declared with another group of nations and Liberty is bombed. They return to Young's home to discover that his mother and Burke's sweetheart were killed in the raid. Both men enlist.

Both sides to the conflict are trying to bomb the other out of existence and win the war quickly, but after great loss of life, chiefly of men and women in the cities, the war settles down to a stalemate. The two friends go to the front where they discover that all means of poison gases are in use, and as quickly as one side devises a new weapon the other one copies it. The enemy develops a high frequency wave that they project that paralyzes and kills instantly any one near the surface.

Young and Burke are detailed to capture one of the projectors. Both men are promoted and decorated, Burke becomes a lieutenant and Young a corporal. Meanwhile the war is being brought back to the cities. There is a constant food shortage, that becomes so intense that no prisoners are taken in the battles, but are killed. The war goes on for three years and Burke has become a captain.

The men get their first leave of absence. Since all of their friends are dead or in the army they have no place to go except to a Soldier's Home, where they are watched carefully so that they do not tell any of the secrets of front warfare. After two weeks of it the men are glad to go back to the front. While at Liberty, on their way back, the city is bombed, and Burke loses his leg. Three million people in the city are killed during the raid.

From then on both sides concentrate on huge air raids on the other. Three more years of warfare go by, when Young is finally assigned to Burke's company again, now as a front line guide. The soldiers are now boys of fifteen and sixteen. During the travel up to the front lines the company is attacked by a huge mass of hungry rats and several soldiers eaten up. The company, half decimated, finally reaches its receiving position behind the lines. Burke and Young go to visit an old Irontown College professor, Sikorsky, who is now an artillery officer and with nerves shattered seems to delight in killing.

The company continues its costly march to the front.

Now Go on With the Story

THEY followed the narrow tunnel. Sometimes they stepped on the bodies of men that had been killed by air pressure when a projectile had burst directly in the tunnel entrance. There were frightful detonations before them, the blasts were sometimes strong enough to throw them down. They struggled on, Young and Burke leading, Blake in the rear.

There was a sharp bend in the tunnel, and then the level rose. Before them was the night sky, lighted by a murky, flickering glare. The tunnel ended in a crater. Beyond that a fearful artillery barrage raged. The bursts, springing up with a flash, stood like black bushes in the dark.

"They have found the entrance." The corporal tightened the straps of his kit bag. "Get ready, boys, we have to make a rush for it. Follow me, who stays back is done for."

He was with Burke on the crater rim. Behind him was the voice of the sergeant: "Through, for God's sake, come on, you puppies."

The air was torn by explosions. Young was in the open. He leaped like an animal, crawled, fell into craters, scrambled forward with superhuman effort, his strength and cunning doubled by one animalistic instinct. To live, to save the living body from the rage of bursting explosive and whistling steel around him. Some of the men, following him, felt the same exertion. Some did not. These stumbled on with paralyzed limbs, crouched in shell holes, trembling and powerless. They were the ones, destined not even to reach the front lines. Contorted, torn bodies leapt through the air, fell with strange motions. The age old cry of dying man children sobbed through the air filters: "Mother . . ."

Young stood at the rim of a huge mine crater. Waving his flashlight, he yelled "Here!" There was no use for concealment in this raging sea of shell bursts. One by one the men arrived. The sergeant was among them. Burke was the last, dragging a wounded recruit, who died when the lieutenant let him down. They were about fifty all told, crouching in fox holes, that infantrymen had burrowed into the slopes of the crater. Behind them thundered the barrage. They were through.

They stumbled on through foggy, flickering darkness, between the black bushes of shell bursts and the sluggish, white puffs of gas projectiles. They reached the steep banks of the Kitchen Ravine. Down there the caterpillars of mobile batteries paddled through the slime. The gunners, hunched beside their barrels, fired whenever their tractors found a level footing. Pale yellow flashes stabbed from the muzzles. Whining, the projectiles of batteries flanking the ravine fell between them, throwing up muck and slime in gushing, vertical columns. Burning ammunition flared into yellow, sparkling fireworks.

The guide followed the ravine, working along its slope, the company behind him working from hole to hole, wallowing in mud and pulverized soil.

A rushing din filled the ravine, black shadows, glitter-

"THE Final War" comes to its disastrous finish in this issue. No man that we know of has pictured more brutally, than our author, the effect on body, mind and spirits of a war on an entire world. Most wars end with one side gloriously victorious; others end by agreement or armistice; but this final war, that will be brought about by scientific weapons, ends in a cruel and savage way unequaled in history. This story is an epic of humanity's greatest blunder, and a prophetic warning to the world by a man who has not only gone through the hell of the Great War, but who has looked clearly into the future to see the catastrophe in wait for us, unless we can bring about universal peace.

We doubt if anyone can read this story without being deeply touched. The editors, hard-boiled as they are, found themselves unable to read the story through with dry eyes.

ing in the light of muzzle flashes, zoomed through the darkness. Flying low, their wings almost touching the banks of the ravine, a flight of ground combat planes rushed upon the firing caterpillar batteries. There was the staccato of machine guns and rows of phosphorescent flashes, where their explosive bullets hit. One of the planes fell, hitting the bottom of the ravine with a shattering crash and bursting into red flame. They were past.

The company kept on following the ravine. In the first false twilight of dawn Young recognized his location. A huge concrete slab, cracked and turned over in the soil, had sheltered the kitchen, that had given the ravine its name. They had arrived at what the commands farther back termed as the "first positions."

CARL W. SPOHR

Artillery fire had thinned out somewhat, only trench mortars and well registered batteries being able to shoot accurately enough. The corporal found the entrance of a tunnel behind the concrete slab. The interior was filled with rows of corpses. A mole tank, its occupants killed, was wedged in the passage and had to be scaled. There were few living men in the tunnel. Some of them were sleeping. One was sitting in a corner, singing to himself. He laughed hysterically when Young spoke to him.

The tunnel ended in a mine crater. Eventually they found the other end in the opposite slope. Inside was the same picture, corpses and another mole tank. There were no wounded, they all had died when the poisoned atmosphere reached their bodies.

A man sat in the opening of a narrow passage, leading upward. Young brought his flashlight close to the face plate of the squatting figure. "Hello, Bob, where are the boys?"

A ghastly grin was on the face under the plate. With an idiotic motion he pointed upward.

The corporal pushed him aside. When he ascended the stairway, he became aware of a throbbing pain in head and body. "Damned," he muttered, "they still have juice in their projectors, our cables are cut long ago."

Pale daylight filtered through narrow loopholes. In a low, arched concrete room a dozen men squatted in the corners and around a machine gun. One was sprawled over the floor, his arms extended. Nobody stirred.

THEY were dead, killed in their concrete box by some fiendish, hidden device that had found them. There were no wounds or burns on them. The face plates of their helmets were closed.

Captain Burke had been examining the corpses. He raised his head. "Do you know what killed them, Fred?"

Young shrugged his shoulders. "They have new tricks every day. Perhaps a new projector ray. Perhaps a gas. I see their air tanks are empty."

The captain's gas detector showed only a moderate percentage of the well known CBX, that was neutralized by the air filters. Burke stood up. "Well, no use speculating. Did you count the company, Blake?"

"Yes sir. One sergeant, three corporals, and twenty-five privates. After the last count, most of the casualties were in the ravine."

Burke did not answer for a minute. Then he said: "Thanks, Blake. You man the machine gun with four men. Singer will relieve you in four hours. Are there other stations to be manned, Fred?"

"Most of them are cracked. There is a light trench mortar in a camouflaged shell crater, that you reach through that tube over there. But, of course you can't move around there in daytime. I better show you the terrain through the loophole here."

There was not much to be seen. An empty depression in barren, pulverized soil was terminated by a gradual ridge with the torn remnants of wire impediments.

"There must be combat points of the enemy right behind the summit of that ridge," Young explained. "Projectors to be sure."

"Yes, I can feel the damn things all right," Burke said. "Can't we do anything against them?"

"If they don't get worse, we better not. No use moving around too much."

Burke sat down. "All right. I see it's the old way of fighting, only nastier. My stump hurts, Fred, from that run last night.

"Have the casualties put along the wall, Blake. We put them out, after it gets dark. Take their weapons off, and make sure about their air tanks."

After cleaning up the dugout, Blake reported that he had found all of the air tanks on the dead men empty.

Slowly the hours of the day dragged on. The company was cut off from all communication. The wave barrage and the electric vibrators and projectors made the small battery radio in the machine gun dugout useless. Young and the captain had only very vague ideas about the position of the enemy and about the positions of their own forces beside them. The company had to stay concealed and fight, if they had a chance to. These were the usual conditions in the first combat position.

The men ate, inserting food tablets taken from sealed tins through air lock tubes in their helmets. They drank in the same manner through tubes.

It was comparatively quiet in the front lines. For the time being the rumble of artillery fire was behind them. The occasional low whistle and shattering burst of trench mortar projectiles was the only noise breaking the brooding silence.

In the afternoon the throbbing pain caused by the electric projectors, became paralyzing. "We have to do something," Burke said, "before they freeze us stiff."

Young got up. "Let me do it, John. I know how. I think I can get them with the TM."*

"I go with you."

"You better stay with the kids. And I do it rather alone. The less commotion, the better. Get the men down into the tunnel, except the MG** crew."

*Trench Mortar.
**Machine Gun.

The corporal crawled through the tube to the trench mortar. The little thing in the crater looked like a toy. Slowly and cautiously Young pushed a tiny periscope above the crater rim. He noticed a narrow path of glowing heat swinging back and forth through the wire impediments on the ridge. Measurements, taken with the periscope and a simple calculation gave the exact location of the projector. Its height indicated that it was not installed subterraneously, standing probably in a crater like the trench mortar.

There were fourteen projectiles for the mortar left, little five-pounders of vicious effect. Carefully Young adjusted the mortar and took the safety locks from four projectiles. He knew the first shots would have to be hits, or it would be too late. A last, fine adjustment, and he fired the four projectiles in fast succession.

He felt how the throbbing pain disappeared and heard the bursts, when he was already in the tube crawling back to the machine gun dugout as fast as he could. Behind him a heavy projectile hurled his mortar into the air. The gas pressure blew him ten feet forward in the tube. One could not make himself conspicuous in the front lines without receiving an answer.

WHEN darkness came the soldiers in the dugout reopened the mouth of the tube that had been closed by the answering projectile. The crater was twice as large now. Young showed them where they could deposit the bodies of the killed men, without attracting the fire of the enemy. They dragged the bodies through the tube and put them in a shell hole, well away from their combat station. Doing this, they were harassed by machine gun and trench mortar fire, but escaped without new casualties.

After this customary kind of burial they went back to their concrete box and Blake arranged for the night watches. They had closed the loopholes of the machine gun nest, except one, which was screened behind the lookout post. Inside the dugout a battery torch spread feeble light. Burke wrote a report, hoping to get a runner through to the staffs in the third position. The men drowsed in the corners of the room.

Outside was a dull thud, and another one. Suddenly the lookout at the loophole slumped to the floor. Through the loophole flowed a greenish, heavy gas, it clung to the walls almost like a liquid, curled and flowed over the floor.

"Close valves!" Two of the men fumbled, finding the valves in their gas helmets too late. Their hands dropped paralyzed, their faces under the heavy glass plates were ghastly in powerless agony.

A new gas, against which the filters did not protect, had overtaken them. The corporal looked at his wrist watch. The air tanks would supply air for an hour. There were no reserve tanks.

Outside was the thudding of bursting gas projectiles, intermingled with the vicious rap of high explosive. A heavy trench mortar projectile landed on the rear end of the dugout, closing the tunnel entrance. Iron reënforcements were twisted in cracked concrete, and through the gaps the gas flowed like malicious, searching tentacles. The only exit left was the tube.

Young unscrewed the air tanks from the helmets of the two dead recruits and handed them to the captain Then he pointed at the tube. Burke nodded.

One by one they crawled into the open. The ground was covered with gas. Sluggishly it flowed over the ground, curled and writhed in grotesque shapes. Behind them an artillery barrage stood like a dark, flashing curtain. On the ridge was the glow of iron stakes and wire, vibrating under concentrated projector waves. Only before them was a dark gap, where the projector had been put out of action by Young.

Slowly the men realized that the end was inevitable. Even if they would succeed in breaking through the barrage, the rays of the adjacent projectors, interlocking behind them, made a retreat impossible.

Young brought his head close to Burke's helmet. "Looks as though they are going to attack," he yelled through the infernal noise of the barrage. The captain pulled his signal pistol. All communications being cut, they had to rely on old, simple methods. Red Very lights rose into the murky sky, repeated in the flanks and behind them.

Seconds later the artillery of the sector had recognized the signal. Thousands of barrels jerked back under the vicious recoil of the driving charge, the counter barrage began. The sky was aflame with the flicker of muzzle flashes, the air reverberated with an incessant, shattering roar.

The men were lying at the crater rim, waiting for the enemy that might come, and death that would come. The captain looked at the faint glow of his wrist watch. Twenty-five minutes of breathing left . . .

He crawled over to his friend, who was beside Blake, looking over the crater rim. "Fred, it's all over now. It was a short visit I had with you."

Young did not answer. He knew that there was no way out.

Burke continued: "I take the rest of the boys, and go over the top with them. We can use the gap in the projector barrage, that you have torn, Fred. We may be able to do much damage before we die, because they will not expect us. Better to die fighting than suffocate here or breathe this ghastly green stuff.

"You and Blake are the most experienced, and I serve my country best trying to save you. They probably will attack after our air runs out, and they probably will lift the wave barrage immediately before the attack. You two take the two extra air tanks and try to get through with the radio. Our tank battalions will be massed for a counter stroke. You could be very valuable piloting their movements."

Young did not answer for a while. Finally he said: "I go with you, John."

Blake opened his grenade pockets. "I won't stay, Captain."

Burke put the two air tanks before them. "I knew you would say that. But here is no place for personal feelings. I am in command here. You take the tanks. This is my last word. Get ready, boys, assault equipment."

He threw his kit bag off, tightened his belt, opened his grenade pockets and pulled his pistol. The recruits watched him, white faces staring under the glass plates of their helmets.

Young grabbed his friend's arm. "John, you can't do

that, you can't leave me. I want to die, it is easy when one has given up hope."

"Get ready, boys. Corporal Young, can you tell me where the right and left projectors are?"

CHAPTER X

Behind the Lines

YOUNG had been trained for six years to obey a uniform. He submitted. Businesslike he pointed out the location of the machines and the best way to approach them.

"All right, thanks, Corporal." Burke's voice was calm and clear, though he had to yell to make himself understood. "Sergeant Blake, you will cover us with your rifle. If anybody turns back, drop him. It's a better death than to suffocate. Corporal Singer, you take the left projector. Here, these twelve men."

"Yes sir." Singer was boy of eighteen.

"I take the other one. Get as close as you can until they spot you. Then make a leap for it. Take as many along as you can. Do your best, boys, think of the air raids. Hand grenade and knife, as in the days of old.

"Goodbye, Blake. Goodbye, Fred. Don't get soft, old man. It will be over soon."

"Goodbye, John." They felt each other's hand through the gas gauntlets.

"Open your air valves half a turn, boys. Easy now."

The captain was in the open. The men followed. The air from the tanks having a high percentage of oxygen, elated them, after the valves were opened. They had been frightened children, but now, after they had given up the hope to live, they were as dangerous as cornered animals.

Slowly and cautiously they worked over to the ridge. The gas on the ground helped to conceal them.

They were on the ridge. A rifle spat. Suddenly there were leaping figures, huge in the fog, grotesque demons that with burning lungs, drunk with rage, leaped upon the machines that had tortured them. There was the crash of hand grenades on either side, muffled, unearthly yells cutting through the rumbling barrage, the green, blinding flash of shortened high tension cables, and the crash of hand grenades exploding with incredible rapidity and spreading out in both sides.

Blake clenched his fists. "God, they are fighting," he sobbed.

There was the flash and the report of a last grenade to the right, and then the rumbling barrage ruled alone again. A white star light rose, its magnesium flare shining with clear beauty over the gas fog and the dark, flashing mushroom forests of the shell bursts.

"It's all over now." Blake buried his face in the sand.

"Goodbye, John." Young was glad that the sergeant could not see the tears that rolled under the face plate over his cheeks. "Come on, the air is running out." His voice was husky.

They wriggled back through the tube. Young lit the battery torch and plugged the radio into his helmet. The wave barrage was still up.

They exchanged air tanks. Young kept on trying the radio. Suddenly he waved his hand. The wave barrage was lifted. Up and down he tried the dials. There was a wild turmoil of orders and signals, drowned in the drone of electric vibrators.

Suddenly a loud and clear voice came: ". . . left, 24 right, green pilot light. Front turret HE percussion, 850 rapid fire after white star light." A heavy tank unit and close. Frantically Young tried to cut in, repeating over and over the complicated dash-dot call, that was the radio pass word. After endless minutes the tank picked up his signal. "HT 1425."

Young talked fast and with desperate clearness: "Gap in projector barrage at 31.23 by 13.27, four hundred yards wide. Insulated tanks can pass interlock. Will fire two green lights in fast succession every minute. Corporal Young, B 1427, speaking."

Answer came quickly: "31.23 by 13.27, four hundred yards. Two green lights in fast succession every minute. Will come and pick you up. Are now at 31.06 by . . ." The wave barrage cut in.

Young tore the cables from his helmet. "The tanks are coming."

They crawled through the tube in the opening. The first two Very lights rose.

Young kept his eye on the watch. The second two lights.

Blake gripped his arm. "There, they are coming. Attack."

The machine rifles of the two men spat. Where their explosive bullets hit, dark figures dropped into the green mist.

Young kept one eye on the watch. The third two lights rose and gave their position away. Something dropped, burst. In Blake's helmet was a muffled groan. He crumpled and lay still.

Young kept on firing at rows of dark figures that materialized everywhere in the mist. Another grenade burst behind him. He was not hit and kept on firing. The barrel of hisweapon was glowing hot.

BEHIND him a star light rose, rushing into the air, and branched in sparkling, white beauty. Yellow muzzle flashes stabbed. The bark of cannon and the rattle of machine guns came from huge black forms, creeping and swaying in the darkness behind him. The corporal fired his last two lights.

The attackers before him melted away in the fire of the tanks. A narrow pencil of light came from one of the black forms. Searching through the mist, it picked up the corporal and held him.

The drone of heavy motors, the clank and grinding of caterpillars came closer, was on him. Young ducked. The tank went over the crater, a porthole opened in the belly of the monster. Four arms lifted the corporal into the air lock of the tank. The bottom clanged shut, a gush of warm, oily air expelled the polluted air of the lock, and the upper door opened. Young climbed a ladder through a round, narrow shaft.

He was in the control station of the tank. The commander turned from the periscope. "Corporal Young?"

The corporal opened his face plate. "Yes sir."

"Good work, Young, good work. Hold on, we have to move. No, come here, you ought to know the terrain."

The tank lurched forward. Holding on to a rail, the corporal piloted the flag ship of the tank unit. They made the gap between the projectors and proceeded to

the right between the two barrages. The ship rocked and lunged, its guns spitting continuously.

"Had a hard time getting up here," the commander remarked. "Lost three ships in the barrage."

An infernal crash on the outside told that they had been hit.

"They can't scare us with that. Front turret, did you see the flash? Trench mortar. That's right. That fixed him."

It became unbearably hot.

"Projector. 22 left. We get him from the rear. They won't burn up their own men. 50 right. There."

They went over the projector, grinding men and machine into the ground.

Suddenly the heavy tank leaped into the air, came down with a crash. Young lost his rail, hit a projecting hand wheel with his neck and lost consciousness.

The commander swore. "Those damned ground mines. Bow motor room OK? OK. Full power ahead, 52 right. Left flank turret, 500 HE, rapid fire.

"Knocked him out, Charley. Put him away. Did his bit. We are in strange territory anyhow. 42 left, white star light . . ."

When Young came to, he was strapped in a hammock. They had taken his helmet off and wrapped him in a blanket. The smell of hot oil told him, that he was still in the tank, but it did not move any more.

A flashlight stabbed through the twilight. He heard the voice of the tank commander. "Charley, come here. He came to. How did you sleep, boy? Get him to the doc."

One of the tank soldiers unstrapped the hammock. The corporal swayed on his feet, when he tried to stand. His skin burned painfully, his head throbbed.

The tank soldier laughed. "Easy, buddy, come on, I take you to the doc."

The tank was in its home station, a subterranean concrete cave. Electric lights showed terrible dents and gashes in its armored flanks.

"Banged the old boat up pretty well," mused the tank man, when they left for the sanitary station two levels deeper. He left the corporal in the care of two sergeants of the medical corps. They tore off his clothes without any circumstances, leaving him only his identification tag.

Young had to wait in a long hall. On wooden benches were examples of human suffering. There were no open wounds, but broken limbs, gas poisoning, skin diseases and nerve disorders. Finally somebody called: "Corporal Young."

He stumbled through a padded door and found himself in a room under glaring lights. Somebody on a desk said: "For God's sake, stand straight, man. Gas suit sickness, skinburn, ray exposure, shock. Base hospital F 1871. Observation. Next."

The corporal reeled and lost consciousness.

IT was three months later.

Young stood before a padded door.

"Come in."

He entered and found himself in a large room with high windows. Outside were trees, their leaves turning into the colors of fall. The room was filled with books and papers. They piled up on tables and chairs, were stacked on the floor in apparent wild disorder. Bent over a large central table, littered with papers, stood a little man, clad only in uniform trousers and a frayed undershirt. He was a pitiful figure with his hunched back, thin, feeble arms and spindly legs.

Young closed the door behind himself and stood in attention. The little man at the table did not seem to be aware of his presence, throwing figures on a large sheet of paper. Finally he looked up, staring at Young with blank expression.

Then he seemed to remember. "Pardon me," he stammered, "sit down Mr.—I want to say, Lieutenant Young. I am Colonel Doehler." His eyes were beautiful, deep and gentle, with a certain expression of childlike faith combined with rare intelligence. "There is no chair, wait." With his feeble arms he lifted stacks of books from two chairs.

"Here are cigars, the government takes care of me. They let me smoke as much as I want to, which is rather expensive for them." He laughed happily about this joke.

When they were seated at the table, smoking black, poisonous-looking cigars, the little man continued: "My friend Sikorsky wrote me about you. You know, Sikorsky is a fine man. But he has ideas about atomic structure that I never could quite agree with. We scrapped a lot about it, back in Irontown College. How is he now? He wrote that he was killing *homo sapiens* in quantities. I thought it was a rather quaint expression."

"Captain Sikorsky was the commander of a torpedo station, when I left. He was considered the best tele-observer of the sector."

"Peculiar, what abilities we develop sometimes. But he was always a famous experimenter, and he always went in for the organic. Well, in a way he was lucky, that he did not see when Irontown College was turned into War Academy 613. They put a young chap in his place, who is reading from books that we considered alchemy in our time. All the great names are in the laboratories now, and there is some important work being done. That goes for this place BL 1243 also, but not for me. I don't think that I am quite in my place here. General Howard said the other day: 'You don't know that a war is going on.' I think he is quite right. I have been living mathematics too long. There is no war in figures, only beautiful, unavoidable justice."

His eyes shone with a peaceful radiance from within.

"You know I like music. It is the same thing. All our little human troubles are in it also. But eventually they merge into this justice. We feel the logic of mathematical proportions, expressed in sound vibrations. Do you understand?"

Young nodded. He thought of the electric vibrators in the front lines, that had tortured the life rhythm of his body and brain with jagged, racking impulses.

Doehler, searching the face of the front soldier, seemed to sense his thoughts. "General Howard decided to give me a second assistant with front experience. My first assistant, Captain Phelps, came with me from Irontown College. Just when General Howard's decision was made, I received Sikorsky's letter, and so it was easy for me to do him the favor. I am glad I did, I have the feeling we will get along.

"Your work will be easy. You are to make me see that 'a war is going on,' as Howard puts it. 'Guide my efforts into useful channels,' he said, if I remember right. Beside that you will do some experimental work.

"Tell me now about your experiences at the front. They have been trying to keep me informed, but things seem too unreal, too far away. A personal narrative will make the data I have significant."

Reluctantly Young began to speak, relating events as they had occurred. He told how he had come to wear the heavy grey armor and helmet of a front soldier. He told of endless roads to the hell of the lines; of weeks of torture; of rest periods in the foul atmosphere of caves; of new struggles to reach the regions of despair; of danger, suffering and death. While speaking, he lost his reluctance, he grew frank, passionate and bitter. Events, that had been stored away in his memory, recollections that his mind had not dared to touch in the instinct of self-preservation, awoke to new, ghastly life. Front soldiers were not allowed to speak about their experiences, when luck chanced that they ever came in contact with people behind the lines. But the soldiers would not have spoken anyhow. What was the use of poisoning the dreams of happier people? And they would not understand anyhow.

CHAPTER XI

Women and War

DOEHLER did not understand this grey-haired young man. But the wonderful machine of his brain registered facts and impressions, combining them to the certainty that an inevitable catastrophe was upon humanity. There was a ghastly trend in the development that the world was taking. His mathematical mind conceived a curve, that was bent more and more toward an axis of the absolute zero, where all known laws of nature became meaningless.

Young wound up, telling, how after his last night in the front lines he had been raging in a subterranean hospital for months, how he finally had been given an officer's commission and how he had been decorated, because he "had been luckier than those that were killed." When he said that, he thought of John, whose torn body was rotting now somewhere between the combat points of the Liberty Salient.

Doehler's eyes were on a sheet of paper. His feeble, bony hand drew a curve, down, down—here on the bottom of the paper was the absolute zero. Here . . . The pencil point broke.

He looked up, gazing at the soldier as though he were a being from another world. Then a kind smile of recognition spread over his features. "Excuse me, my friend," he said awkwardly. "Use the rest of the day to make yourself at home in your quarters. Tomorrow morning you can go with Phelps to the testing grounds."

Lieutenant Young slept well in his little room under the roof of the laboratory. After the meagre, synthetic meal in the officers' mess hall he had gone to bed. He could sleep for days, since he had left the hospital.

After breakfast he reported to Captain Phelps. The captain was a lanky, blond fellow with watery eyes. He returned Young's salute stiffly. "Wait for me at F entrance. I shall be down presently."

Phelps drove up in a small, fast two-wheel car of government manufacture. "Hop in." They drove on a narrow road under trees that were shadowing a number of long one-story buildings. Phelps explained: "The big, rusty sheet-iron shack over there, is the chemical warfare lab. Good to keep away from it. Sometimes they don't know what they let escape. Over there the three rows of barracks are the medical labs. Operation rooms in the green houses. You can't get near now, infection danger. They have found or bred a new bacillus. Powerful beast, I am told.

"The concrete building to the right in the open is the admittance and discharge office, power station, guard house and SS headquarters. You must have come in there yesterday. Those barbed wire zones close in the entire area, twenty square miles. The inner rows are high tension wire. One of the helpers tried to get through the other day. She was burned to a crisp, of course. Those long glass shacks with the steel funnels are the mechanical labs."

They came out into open country. "There are the testing grounds for tanks, machine guns, projectors and other apparatus. Artillery has its own, a hundred miles from here. Over there, outside of the fence is an ammunition factory. Yes, that little village. It looks quiet enough now. They are not allowed to go out in daytime. Last year a factory was blown up fifty miles from here, five hundred miles behind the front. One night a couple of bombers came and did beautiful, very accurate work. I think there was not a living soul of the eight thousand working there, that got away. Twenty thousand tons of ammunitions went up in the air. They blew all our windows. A night pursuit flight brought one of the bombers down, they captured the crew alive. The secret service got their hands on them, suspecting spy work. They questioned the prisoners here and finally made them talk. They make anybody talk, but don't ask me how. It came out that one of those new noiseless bombers had sneaked through in daytime above the clouds. From up there they had let down tele-observation machines, mapping the targets beautifully. Simple enough.

"About once a week they come at night time, trying their luck here. Those black craters over there are from their last visit. Some ninety helper girls were killed that time. They can't touch the laboratories proper. There is a ring of some forty vortex batteries around the buildings, keeping up a barrage that they have not been able to break. Even their torpedoes bounce off. Of course the vortex guns mean quite an expenditure of explosive, but for a limited, valuable target the barrage is worthwhile. They have lost quite a number of ships here. They give us a good chance to try our latest long range projectors. There are our girls."

He stopped the car before a row of miserable sheet-iron shacks, the living quarters of the helpers. About fifty girls and women were lined up in military fashion. They were commanded by an invalid sergeant, who walked in an awkward manner because his artificial legs did not fit very well.

The sergeant saluted. "Good morning, sir. Forty-eight helpers on duty. Helper Smith 3 went to the hospital yesterday."

"Thanks, Froben. Is it bad?"

"Doctor says the hand must be amputated."

"All right. Lieutenant Young, you take the first sixteen helpers. The sergeant will show you the work. Are the projectors in the field?"

"Yes sir. The targets also. The changes were made during the night."

"All right, let's go."

THE sergeant herded the helpers off like sheep. They were poor, gentle creatures, starved and overworked, in ill-fitting, drab uniforms and heavy shoes.

"Never mind, Froben. I take care of my crew. I take the high frequency model in field 3. You go with the lieutenant to field 6." Phelps strode away, lanky and stiff, the helpers following him.

The sergeant limped beside Young. "I hear you come from the front, sir. Been there a long time?"

"Six years."

"My, that's a long time. Ever been farther back than the reserve depots?"

"Three years ago I was on leave in Irontown?"

"Three years ago sounds almost like the good old times. Still, things haven't changed so much since then. They are only worse. The country was being organized then. They have done it now. I saw how it came about. I lost my legs in the transport service.

"Come on, girls, we follow you.

"As things are now, they all must help. They even find jobs for the real old ones. Industrial workers or army helpers. The little kids they have put in government schools. Some of our girls here used to be ladies, until they were drafted and got a uniform. But they're still nice girls. They do their stuff, though they don't seem to have much pep left."

Young, looking at the meagre and bent backs of the helpers, had a vision of girls in light, colored dresses with flowers in their hands, girls with smiling red lips and laughing eyes that had said: "Come back, boys, we are waiting for you." The uniformed ammunition girls in Irontown and the helpers and nurses behind the lines had not obliterated the picture that he had taken along to the battle fields. Would the old happy times ever come back?

The sergeant continued: "That woman over there was the wife of a rubber manufacturer. He couldn't make the grade with the manufacturing council. The government took over the plant. They made him a captain in the artillery. He was killed three months later in the big drive on Liberty. Her three boys died six months later on the same day. Their battalion was gassed with some new kind of dope. She is looney since, but clever otherwise, and a willing worker.

"They say, that they are going to send girls to the front pretty soon, for long range artillery first. I heard that they are drilling a couple of trial batteries on the artillery proving grounds. Men officers of course. Well, some of the girls are tough all right. Our girls here are an exception, they come from a better class of people. Most of the laboratory helpers are college graduates."

They arrived at the projector. The helpers were standing around it, waiting. Young met the look of two hazel eyes. It was like a recognition coming from old, happier days. It lasted only for a moment, but Young meant to see the longing and the ability to love behind the veil of resignation that had dimmed those eyes. Stepping up to the projector, he thought: "How these girls have changed. How proud and conscious they were of their well proportioned, well-groomed bodies. A poised, balanced mind was reflected in their faces. This girl's face is only eyes, and her body is only a weak container for a soul that starves and does not want to die."

The sergeant snapped cables in place. "All right girls, on your stations. The usual order. Three shots a couple."

The helpers turned and set out for the targets, a mile away.

The sergeant explained. "This work is sort of tiresome and dangerous for the helpers. They have to make the observation notes. Over there to the right is the spectroscope, not far from the target, and these things stray something fearful on this distance. That's why we have two on observation, and the rest in the dugout. After three shots they exchange targets, and the next couple steps in."

Young thought of two hazel eyes that had looked into his own. He could not forget the clear, narrow face with those eyes. A sudden thought occurred to him. It almost frightened him. "Froben," he said, "they told me in the lines that one can get married back here."

The sergeant smiled. "Sure. The government likes it. They give you two weeks' vacation here in the labs. It's easy for you, you got your commission. Just have the young lady come and ask her. She will say yes with all probability. They make the papers out in the guard house. Then the young couple gets one of the little houses yonder in the woods for two weeks. After that everybody goes back to work. The husband can see her once a week on rest days. When the time comes, the mother goes to the hospital. She keeps the kid six months. After that it goes to the nursery and later to the government school, and they make a soldier or a helper out of it. If the husband or wife is transferred, they can write a letter once a month, censored of course. If, after a year, there is no sign of offspring, the government makes out the divorce papers. Simple, ain't it?

"SEE the white flag? They are ready. Now easy, upper left hand corner first. See the hair lines in the telescope? Here is the trigger, and here the stop watch. Twenty seconds."

They kept on burning holes into the prepared target plates, trying to determine the best protection against their own weapon, knowing that the enemy would copy and improve it soon.

The sun was low in the west when they signaled "stop."

The helpers came back, weary and tired.

Young tried to catch the eye of the girl, for whom he had been waiting during the day. But she seemed to avoid his gaze. He saw her walking between the other helpers, her arms hanging limp and tired, her shoulders bent from the strain of the day.

On the drive back to the laboratories his mind was made up. He was under the influence of the mysterious attraction that sometimes singles two human beings out as soon as they meet. Trying to see clear, Young thought about himself like an uninterested observer. Was he, the living corpse, the hopeless front soldier, in love, still

moving in the circle of human life? He felt the burning wish to be close to her. He resolved to hold on to this fleeting bit of a better world, that he had found in a girl's eyes. The front soldiers knew how small the probability was that they would live to see the next year.

In the laboratory he knocked at the colonel's door.

The little man was over his figures. When Young asked stammering for two weeks' leave from his work, the colonel smiled. "I almost expected it. That's why I sent you with Phelps. Take what little love and human life we can give you back here. I have been thinking about your story, soldier.

"I hope she is a good woman. Take Phelps' car, if you want to ask her now. You don't want her to come, I know. You belong to the old times, where there were men and women, not only officers and helpers. Good luck, friend, I see you in two weeks."

Young burned the road up, though he had to drive without lights. There were the barracks.

The sergeant was sitting in the little anteroom, smoking dried potato leaves in an old pipe.

Young stuttered. "Froben, tell the young lady over there to come out to me, I want . . . God, this is so different. Damn, are we cattle? No, this one in the corner over there, Froben."

The sergeant chuckled. "Why didn't you call me over the phone? I could have sent her up to you. You are an officer, she has only the rank of a private. All right."

Young stood outside, waiting under the stars. The door creaked. There was a grey uniform. A clear face with large, dark eyes was in the twilight.

He stepped up to her, his heart hammering against his ribs. "Miss, I want . . ."

A low, melancholic voice said: "Helper Bowden, Lieutenant."

"Miss Bowden, I am a front soldier. I will have to go back. I will die soon. Will you marry me?"

She leaned against the shack, she did not answer.

He kept on stuttering. "I don't want to hurt you, please, tell me tomorrow."

She laid her hand into his. It was a hard and rough little hand, but he held it carefully, as though he held a sick bird.

She said: "I will do it. I will have to die also, before the war ends. But our child will live, to see happier days."

He took her into his arms. She put her head on his shoulder. "Fred," she said, "the sergeant told me your name, when I asked him, coming back from the field. I am Irene."

"Irene means 'peace.'"

He kissed her. Her face, shining clear and beautiful under the star light, was wet of tears.

"I am happy, Fred."

In one of the laboratories a little man in a frayed undershirt, a dreamer with a gigantic brain, a comical figure as a colonel, but worth to an army more than six fighting divisions, strained his mind, how a war that was ruining the world might be ended.

Young was out early in the following morning. Using Phelps' government car, he was back at the helpers' barracks before the day workers had stirred.

Irene Bowden was sitting on the doorstep, holding a little bundle, all her belongings, in her lap.

When she was beside him in the car, she said: "It was dark when you told me that you wanted me, Fred. We can turn back if you are sorry now in daylight. There are many girls, and so few men."

He stopped the car and kissed her. "I did not know you, and I have been dreaming of you through endless nights at the front. This is so beastly, Irene, they are treating us like animals. But I will try and try to make life human for you, to make it like it was in the old days. I love you, Irene."

She clung to him like a mother clings to her only child, that is to be taken away from her. "I was never married before, Fred. I am not a widow, and I am not divorced. You know, the government divorces us after one year, if . . ."

"They will never divorce us."

"No, life is short. But our child will live. You know I am only twenty now, Fred. We all look older."

They had to leave the car at Phelps' quarters and walked over to the entrance building. Young carried her little bundle in spite of her protest.

They had to wait at the marriage office, that had not been opened yet. Finally a yawning sergeant, yellow-faced and coughing with gas sickness, made out their papers. "The wedding bus will be here in an hour. Cottage 57. Here are the keys."

CHAPTER XII

Doehler Goes to Work

A RATTLING four-wheel car of antiquated type took them the eight miles to the "Honeymoon Grove," another sallow-faced invalid driving. There was a little one-room shack under trees. The first leaves were tumbling down in the autumn breeze.

The invalid lifted a package, bearing the government seal, from the car. "Here are the provisions, Lieutenant. Down there that little path leads to the water pump. Keep away from the fence over there in the dark. It is loaded, and the guards might mistake you for spies and shoot. Here is a package from Colonel Doehler."

He eyed the package with hungry eyes. "I think it's cigars."

"Wait." Young opened the colonel's package. There was a box of cigars in it and the laconic message: "We must not lose our belief that life will triumph. My regards to the bride. Doehler."

Young gave the driver a handful of cigars. The man stammered with happy surprise. "Thanks, sir, thanks. These are real cigars. Congratulations to you, sir, and the Missus. Goodbye, sir. You will be all for yourselves. There are only two other couples over there. Goodbye."

They saw the rattling car disappear behind a bend of the road. Irene looked at her husband with a modest smile. "Give me the keys and wait here, I have a little surprise for you." Carrying her bundle, she disappeared in the cottage.

Young sat down, looking over the testing grounds that were visible between the trees. Puffs of dust rose here and there, blinding white flashes stabbed. A tank crawled in the distance like a large bug.

"Fred."

She stood in the door of the shack, clad in a gown of white, radiant silk. She had rearranged her hair, and on her cheeks was a soft glow.

"My wedding dress, Fred. I thought that some day somebody, you, would come. I made it from parachutes of light flares." Blushing she looked down on herself. For years she had worn only the drab overall uniform of the helpers.

Young stood surprised, dumbfounded. For six years he had seen only uniforms, soldiers, helpers, nurses. Now, like a goddess from a lost world stood before him—woman.

"Irene, you are beautiful."

Tenderly, carefully, almost with awe, he took her into his arms.

At the same time a conference took place in the large dugout under the guard house. Padded double doors, huge concrete walls, shielding devices and dozens of secret service men protected it.

There were ten men around the table: three of the most eminent scientists in uniform, Ferguson, the medical chief; Miller, a chemist, and Doehler. One soldier, General Howard, the secret chief executive of armies counting after millions, secret dictator over field marshals in gold-braided uniforms. Swift and Bohlen, two civilians, who during the last years of the war had made themselves the sole kings of the industries. And four men in civilian clothes, the secret "Council of Four." Their identity was known only to few.

Doehler was speaking. The coat of his uniform dangled in crazy folds over his back, his thin neck protruded from a collar, that did not belong there. But in his eyes was a visionary flame, and the motions of his hands were like the mathematical curves, in which he saw laws of nature understood only by him.

". . . The gas, proposed by Professor Miller, will bring only a partial success. I admit that it penetrates the present uniform cloth, that it even disintegrates metals, but Professor Miller advises us that he has found already a counteracting reagent. The enemy will find this reagent before we can force a decision. Past experiences has taught us that much. We also know that our own armies will suffer soon under the effect of the same gas. The theory that the exceptional painfulness in the physiological effect of the gas will force the enemy to agree to our terms, has been disproven by the experience with similar weapons. We know that the powers that make terms will not feel the effect of the gas.

"I now come to the medical warfare, proposed by Doctor Ferguson. I don't have to point at the danger that lies in a mass infection of the enemy, as long as we have not been able to devise a safe serum counteracting the bacillus. To minimize this danger, it has been proposed to introduce the infection into areas far behind the front of the enemy, striking at his roots, at his supplies. The experiment of the big air raids has shown how futile a hope of this kind is. And I say fortunately.

"We had underestimated the tenacity of life. We meant to wipe each other from the face of the earth. There were several million people killed in a few hours, immense property damage was done, but no decision was forced. Retaliation, that was all. The fronts held, because modern defense weapons are dangerous, economical and flexible enough to hold a position for a long time with the supplies on hand.

"And decentralization, a word that has acquired a meaning understood by any child, had begun long ago, long before the war. In fact, men began to see the necessity of decentralization way back in the wars of the twentieth century. And now we are organized like ships with many bulkheads, like the old battleships. Enough guns will continue firing, if one or the other section is flooded. We cannot wait until the enemy is sufficiently weakened by sickness behind his front. By that time we will have to fight the same infection in our own ranks.

"IF we strike, we have to strike at the armament, at the front. And we have to strike in a way that cannot be avoided or countered by the enemy until the decision is forced. That means our weapon must be radical and quick acting. Furthermore we have to strike by surprise, by a great mass of machines on hand. If we have to start building, it will be too late when we are ready.

"The only means that I can imagine is an old, crude one. If we can find an explosive that, easily manufactured, gives a rifle bullet the effect of a light field projectile, and a field projectile the effect of our heaviest artillery, we can strike a deciding blow. And its smashing quickness, its very ruthlessness, will make it more merciful than slower acting methods.

"I have not found the explosive in question. I cannot promise it either. I can only say, that I have made discoveries in the structure of atoms that give me hope.

"I thank you, gentlemen."

There was a minute's silence after Doehler took his seat. Finally one of the Council of Four, an old man with the face of an Egyptian mummy, said with rusty voice: "General Howard, do you share Colonel Doehler's military viewpoint?"

Howard, a short, athletic man with grey, bristling hair and a strong neck, jumped to his feet: "I do, Your Excellency, I . . ."

"That's all." The old man made a tired motion with his hand, and the general collapsed on his chair like a jack-knife.

After another minute's silence the old man continued: "Gentlemen, I propose: Colonel Doehler has twenty days to perfect his explosive. All help he requires is to be given. If he cannot make a successful demonstration within twenty days, the manufacture of GR 19 gas and the culture of FH 315 bacillus are begun in the largest possible scale. Preparatory steps for this are to be taken at once. Do you agree?"

The rasping voice died like a run down phonograph. The men of the Council of Four crossed their fingers in the manner, indicating agreement.

"Unanimous. I thank you. That's all."

The old man shuffled to the door, the other three of the Council following him.

It was two weeks later when Young entered the study of Colonel Doehler again.

"You wanted to see me, sir, after my return. I am late, it is almost midnight."

The room was blue with tobacco smoke. The colonel, squatting like a misshapen animal on a large table, lifted his head from papers. His face was pale and haggard, his forehead, broad and white, was like a bleached skull.

A fire of unhuman, visionary energy burned in his deep set eyes.

"Yes," he nodded slowly, his kind smile appearing and waning, "I need a reliable man for some laboratory experiments. Explosive, my friend. We have to kill, to save life. I have been doing experiments myself, and Phelps is at it now. It is important." There were ugly red acid burns on the colonel's arms.

"Come." He slid from the table.

The telephone rang. The colonel took the receiver. "Air raid formation reported from south-south-west. Combat station. Thanks."

Outside an alarm siren howled. Phelps appeared in the door, his face drawn and white. The colonel jumped at him with surprising agility. "Give me the keys for the car, quick. You go with me, Young. Phelps, you take observation notes from the projector station on the guard-house. Hurry."

Phelps seemed relieved.

The colonel was outside with a few crazy leaps. There was the car. "You drive, Young. To the mechanical lab. Left here."

The car raced through the night, passing dark figures that hastened to their stations.

"Leave the lab to the right. That's it, out in the open. Pass that vortex gun over there. Here is where they are most likely to fall. Two hundred yards more. Stop."

Over them was the starry sky. The laboratory buildings squatted under the trees, dark, silent and dead.

"Are you afraid?"

"No sir."

"Well, my boy, I am. I am not a warrior. But I have to see it, and see it closely. There is a new explosive reported, that they are using. The aspirators are under the seat, in case they use gas. It is not probable though, it is too windy. They know that they wouldn't have much effect with it. It thins out enough in the open, that even CBX is made harmless by the masks and uniforms of the helpers. And the laboratories proper they can't reach, not even with controlled torpedoes. They can't penetrate the vortex barrage. Beautiful night for observation. Watch for the bluish white nucleus in the burst. The description I got checks with some of my recent experiments. They . . . listen."

A very faint hum, that one could rather feel than hear, filled the atmosphere.

"They are coming."

A TREMENDOUS, thundering roar cut his words off. The vortex batteries, surrounding the laboratories, had taken up the barrage, hurling a closed, impregnable wall of swirling, twisting air toward the sky. Any air vessel attempting to pass this barrier would be kneaded into a mass of falling debris. The men could not stand upright, the violently rocking air tearing at their bodies. They knelt beside the car.

Just in time. A blinding yellow flash, a huge aura with a bluish nucleus, was a few hundred yards to the left. The first bomb had fallen. A tearing explosion, that seemed to silence the roar of the vortex batteries, rocked the earth. There was another flash, another explosion to the left and to the right and before them. Huge blotches of yellow light flashed in the air, where air torpedoes, gliding down, had hit the barrier of the vortex batteries.

The air was aflame with detonating bombs. The men were down on the ground beside the car, earth and rocks clattering down on them, fragments cutting viciously through the air above them.

A small red spot appeared in the sky, grew blinding white in a moment. A projector had caught one of the ships. A yellow flame seemed to spread over the sky. Way up there silvery birds hung poised, rocking and dipping in the reverberating atmosphere. A glowing mass fell vertically, leaving a trail of sparks and phosphorescent mist in its wake.

Again the red speck appeared and grew bright. Something up there, spreading into flame, tumbled into the curtain of the vortex batteries. A glowing monster overturned, came down, hit and burst into an awful explosion. There was a short sensation of unbearable light and searing heat.

When Young regained consciousness, everything was quiet again. He was under the wreckage of the car that, overturning under the force of the explosion, had protected him. He stirred cautiously and found that he was not hurt. Patiently he struggled free.

Then he found the colonel. Doehler was pinioned under the steering wheel. Heaving with all force, the lieutenant freed him.

The colonel was breathing. Slowly he came to. Seeing the sky above, he remembered where he was. Then, gripping Young's arm, he said: "I found it. Back to the lab. Quick."

He was up, stumbling, reeling, but holding himself with unnatural energy.

"I found it, back to the lab," he repeated, and in crazy leaps, limping and stumbling, his torn undershirt smeared with blood from scratches and bruises, he ran toward the dark buildings.

The study was littered with broken glass, the windows, smashed behind their steel shutters, had been thrown into the room by the force of the explosion.

Doehler crouched over his table. Figures and figures, a crazy, endless formula, the paper smeared with dirt and blood. "Where is Phelps? Get me Phelps. Cigar. Coffee."

Gulping, sucking, he was over his papers again. Phelps entered.

"Phelps, hurry up, man. Here, formula. Get a helper, two helpers from Miller, chemical lab. This has to be done at once. I am with you in a minute."

Phelps was gone. The colonel leaned back. "We have to kill, Young, kill to save life. Give me a fresh cigar. God, those electrons around that nucleus. It came to me so suddenly, it was like seeing them.

"O yes, your wife. We must not forget. Call the barracks, Sergeant Froben. Say, Colonel Doehler wants the connection."

Young obtained connection with the sergeant after using the colonel's name. Froben's voice was imperturbed. "Sure, Lieutenant, we are O.K. Blew the windows out and a piece through the roof. That's all. Regards to the wife. Sure. She was sort of anxious about you. This ain't no private call, you ass. I talked to the operator, sir. The Colonel Doehler wants to know, get me? Good night, sir."

Dawn filtered through the closed shutters of the chemical laboratories. Doehler held a small vial with an amber

liquid in his hand. "Here, Phelps. Exactly one cubic centimeter. Take Miller's car. Get everything in shape. B 316 detonator. Don't set it off until I come. We can't do it before nine, we have to clear the adjacent fields. And I don't know what it will do. I am down before eight. And, Captain Phelps, you are responsible for accidents that might happen, before I come. Thank you.

"Young, you come along to my room. I want to talk to you."

Doehler dropped into a chair. "Sit down, Young. We have time. At nine a new chapter in history will begin. We shall kill a little while longer. Then, there will be no more suffering. Peace. And it will be brought about not by the atavistic methods of blundering generals, but by the pure logic of science.

"Music, my friend is sublimated science. Atoms and worlds revolve restlessly, finding their axis in the great logic, upon which life is founded. Here is music, written many centuries ago by men who were believing like children in a great, kind being that is good and just. And we have the feeling today, that the mysterious mechanism of this music is revolving around the same axis, that holds atoms and worlds. We feel that an equation is solved, and we go home, somewhere."

CHAPTER XIII

The War God Speaks

HE had set the dials of a small machine in the corner. The almost forgotten music of the masters of the eighteenth century floated through the room. With clear and serene purity, with mysteriously convincing logic it made promise of realms, where there is no war and suffering, only eternal justice and harmony.

Doehler sat, his head in his hands, motionless with closed eyes. Young, standing at the open window, looked into the distance where the sun rose, bringing hope to an awakening world.

Suddenly his eyes were blinded by a dazzling aura of light, a huge white flame, encircled by an electric, blue radiance. Air rushed against him like a solid, burning wall and threw him back into the room. The house creaked and grated, like shaken by an earthquake. When he gathered himself up and went back to the window, a tremendous crater yawned on the test fields. A pillar of dust towered over it, writhing and whirling like a tornado. The sky had darkened, vicious gusts of wind bent the trees, tearing clouds of yellow leaves from the branches.

Doehler was beside the lieutenant, clutching the window frame in trembling hands. "My God, he has set it off. And the power of the atoms is free. I wanted an explosive, I did not want to do this. It is awful."

Behind them the music of forgotten times gathered the threads of the counterpoint into an all embracing, great chord.

The two men were down in the street before they knew it. Doehler called frantically for a car. White faces appeared in the doorways. An ambulance shot clanging around a corner. The colonel leaped into its path. The driver stopped the vehicle with an oath, then he recognized the colonel. The two men jumped into the seat beside him.

When they reached the test grounds, the wind had stopped. A fine volcanic dust was falling. At the observation stands a little group of men had gathered. On the ground were two figures. One, his head almost severed from the body, was Phelps. The other, a helper, lived. The force of the explosion had torn his uniform, pricked his skin with gravel and fractured his shoulder.

Doehler kneeled beside him. "What happened?"

The wounded man gasped painfully. "Captain Phelps insisted to touch off now. There was a white flash and heat. It was awful."

A two-wheel car stopped behind the group, two men alighted. "Captain Phelps here?" one of them called.

He saw the two figures on the ground. "Damn, too late. He's dead, Fuller. I am Inspector Sweeney of the SS, Colonel. You better come back with us to the lab. We had business with this fellow here." He began to search Phelps' body. "Ambulance, get those two guys to the colonel's lab. Yes, the knocked-out one too. You can get a doctor there."

He pointed to Young. "Who's that? Your assistant? Crony of Phelps, I suppose. Well, you better come along anyhow, Lieutenant."

The laboratory was filled with detectives.

"Find anything?" Sweeney called out.

"Nothin', Inspector. A lotta paper and stuff. But it don't mean nothin'. Just looney figgers. Upstairs was a squawking box with some silly music going."

"All right, keep on looking."

They put the dead and the wounded man into the colonel's study. The inspector called one of the detectives. "Fink, search this fellow again, carefully," he pointed to Phelps' body, "while I question this bird."

It turned out, that the wounded man knew very little. He had never worked with Phelps before.

"Did the captain talk to anybody while you were with him?"

"Yes, he stopped a sergeant on a motorcycle, who overtook us. He told him to deliver a message to Colonel Doehler."

Doehler jumped up in his seat, his face was white. The inspector grew interested. "Did ya get the message, Colonel?"

"No, I did not." Doehler took a sheet of yellow paper. "Was the message on this kind of paper?"

"Yes, I believe. There was a government stamp on the corner. It was kind of dirty."

Doehler slumped back into his chair.

The inspector asked suddenly: "What was on that paper? The formula, I suppose, for the stuff that you blew the hole in the grounds with?"

Doehler only nodded.

"Rotten business. How much did ya blow up, anyhow, a wagon load?"

"One cubic centimeter."

"My Gawd, man, that is just a thimbleful. It is crazy. And that in Phelps' hands. We suspected Phelps right along, but couldn't get the goods on him. I told ya, I didn't like him. I couldn't say more, or he would have been warned. Last night during the air raid we found out something. And now he beat us to it. Rotten. Find anything, Fink?"

"Nothin', chief. He musta been slick, all right."

THE inspector turned to the wounded man again. "Can you identify the sergeant that took the message?"

"I think I could."

"My Gawd, where is the doctor? This man has to live. He has to see every sergeant in this lousy dump. By the way, Colonel, General Howard is on his way. I called him right after the big bang. You better wait for him here. Fuller, you take charge until I am back. Nobody leaves the house without my permission."

It was almost noon time when General Howard arrived. Doehler had not stirred in his chair. Young looked through the window, the detectives hung around, smoking and spitting.

The general entered, followed by the inspector. "'Lo, Colonel. I see you made your demonstration. I saw the hole from my plane. Sweeney tells me that you set off only one cubic centimeter. Well, you won your point. With that we can wipe the earth clean."

The colonel was standing. There was a desperate determination in his face. "General Howard, we must make peace."

"Yes certainly, after victory, peace." The general humored him like a child. "You are upset, Colonel, overworked. Too bad, the accident had to happen. Well, worse accidents will happen at the front."

"General Howard, you do not understand. I have done more than I wanted to do. I have liberated the forces of the atoms. Do you know what that means? We will blow the earth to pieces. And the enemy may have the formula now."

The general ignored his words. "The ammunition manufacture council will meet here at seven p.m., Colonel. You will give all necessary data for manufacture then. Good day."

Doehler stepped into his path, his feeble body shaking with rage and fear. "General Howard, I will not. Tell the Council of Four to make peace at once, or the enemy may have a formula that they will never get, because it is too big to be played with in your childish wars. I intended to find an explosive powerful enough to end this mad game of killing, but I found a formula, that in your hands would tear the earth to pieces."

The general's face was white. "I am sorry, Colonel Doehler. I see my duty.

"Inspector Sweeney. Colonel Doehler is under arrest. At three p.m. you report to me with the manufacturing data for the colonel's new explosive." He saluted stiffly and left.

Sweeney sized up his prisoner in a business-like manner. "O K., Colonel, put your coat on. Fuller, you stay here; Fink and Parker, you come along. Come on, boys, we gotta hustle."

Young saw the handcuffs around the feeble wrists of the colonel. A blind rage, that wanted to kill, arose in him.

Doehler saw it. The fear left his face. Straightening his crippled body, he said: "Lieutenant Young, you are still my assistant. You stay here and watch that my scientific work is not destroyed. Thank you, sir."

There was a mysterious smile on his face, when they led him away.

Young had fallen back in his chair. He felt sick at heart. Slowly a clock was ticking the time away. At one o'clock two helpers removed Phelps' body. At one-thirty they took the wounded man to the hospital. Food was brought. The detectives ate heartily and smoked the colonel's cigars.

The clock showed five minutes after three when Young heard a car on the driveway. He went to the window. Two detectives helped the colonel from the car.

The door opened. Colonel Doehler's face was white. His mouth was half open with limp jaw muscles. A drop of blood ran from his lips over the chin. He did not seem to notice it.

The detectives dropped him into a chair. "OK. Come on, boys, the chief wants you back."

Young was alone with the colonel. He felt a lump in his throat, he could have cried with helpless, despairing rage. Brutal, filthy hands had dared to defile, to torture this feeble body, that housed the most precious jewel of this brain. What were these beasts with dirty, murderous hands, these greedy robbers on their money bags, these stone-hearted upholders of preposterous traditions that ruled the world; what were they, compared to this cripple whose mind towered above them in regions that they would never reach even in their dreams?

There was a helpless agony in Doehler's eyes when, recognizing a friend, he smiled painfully. "I am weak. They have the formula."

The following weeks showed that Colonel Doehler's body and mind were broken. The wonderful mechanism of his brain had been disturbed by blundering, brutal hands. For hours he sat in his chair, looking down on the floor. The only thing he said was: "They must make peace before it is too late."

General Howard was kept informed by the secret service office of the laboratories. He barked an order to his aide-de-camp.

On the following day a court-martial was held. Colonel Doehler did not try to defend himself. He only tried to make the court understand that peace had to be made at once. He was sentenced to serve in the work battalion WP 319.

To serve in a work battalion meant living death. They were composed of mutineers, deserters and the worst criminals. The most depraved, brutal officers were carefully picked for their overseers. Insufficiently equipped, they worked in the most dangerous and unhealthy regions behind the front. Food was insufficient in quantity and impossible in quality. Discipline was maintained by brutally cruel methods.

On the same day, when Doehler was degraded to a second-class private with all due ceremonies, Young received march orders for an unknown final destination. He had ten minutes to say goodbye to his wife.

It was in the waiting room of the discharge office. Irene had been called in from the fields. They could not even be alone in these last minutes.

She fought her tears down bravely. "You will come back, Fred, you must, I love you too much."

"I will, Irene. I know, I will."

He kissed her for the last time. The ten minutes were up. He went, his arms hanging down, his shoulders bent as though he carried a load. He thought of the men killed beside him during six years. "I am coming, John."

Behind him a woman stumbled back to her work, sobbing.

The great machinery of war turned its wheels, the grief

of human beings meant nothing in the chess game of the war lords.

All chemical plants and ammunition factories had taken up the manufacture of the new explosive to full capacity. It was named AX 343, and the projectiles, torpedoes and bombs, filled with it, were marked with a green dart.

"Green dart ammunition" began to pile up in the ammunition dumps and battery positions. But the battery commanders had strict instructions to fire it only on special order from the brigade staffs. And the brigade staffs were waiting for orders from headquarters.

The unknown sergeant who had taken the yellow slip of paper from Captain Phelps was never found.

CHAPTER XIV

Armageddon!

TO his surprise Lieutenant Young landed eventually in a flying school in the vicinity of the dead city of Liberty.

The commander of the school was a major, a nervous, one-eyed man with thin, trembling hands. "Lieutenant Young, you are assigned to us for the new QD 4 scout-planes. Report at once to Captain Renard at hangar 16."

The QD 4 planes were exceedingly small and fast single-seated machines, powered by a huge high-compression gas turbine. In addition to the turbine, driving the noiseless propeller, they were equipped with a number of rocket exhaust tubes, that in case of emergency could propel the ship with the velocity of a projectile. The short, stubby wings and the smooth, torpedo-like body were covered with a new composition, a smooth, tough material, that was transparent as glass. The ships were unarmed, and due to their speed had to be handled with an acrobatic skill.

After three weeks of training, during which some twenty ships were cracked up, Young was sent on his first reconnaissance trip to the front. His instructions read: "Avoid ships of the enemy. Fly as high as visibility permits, watch artillery and ammunition dumps. Report at once explosions that look like white flashes encircled by a blue fringe. If attacked, retreat by rocket power into clouds or cover of our combat forces, returning to observation object as soon as possible."

Young's ship left the ground with a sickening lurch. Going into a steep climb, he passed the city of Liberty in a few minutes. Down there was Sunnyside Suburb. He remembered the trench system, that they had passed, when he went into the lines the last time. Before him over the receiving position was a dense cordon of combat and pursuit ships. He dropped the signal flare that, colored differently every few hours, was the secret password of the air forces, and zoomed over a flight of combat ships toward the lines. Down on the ground were yellow muzzle flashes, and black mushrooms of smoke and dust grew with lightning-like quickness from the marred soil. Distinctly he heard shattering detonations over the drone of his turbine.

He passed the confused tangle of the first positions, where the opposing armies were deadlocked in an agonizing grip. "John's grave," he thought. Now he was over the enemy positions.

Little black specks in the air grew rapidly. Beside him were the white streaks of tracers and then the phosphorescent bursts of explosive bullets. He banked and then, bracing himself in the seat, pulled the rocket lever, aiming for a white cloud above. There was a paralyzing feel of weight and the deafening, hissing roar of the rockets. He shot through the cloud like a flaming projectile, leaving a wake of flaming, yellow mist. Up there in the thin air of the clear blue sky he shut the rockets off, caught his ship and dived back through the clouds. The ships of the enemy had lost him.

Everyday he set out, flying from twelve to eight, dodging the ships of the enemy, and returning to his objective, watching for the white flame with the blue radiance. He knew what his watch meant. He had seen the white flame on that morning when Captain Phelps had given a yellow slip of paper to an unknown sergeant.

Then, on the twenty-third day of reconnoitering, he saw the white flame. He had been cut off by a flight of fast pursuit ships. Rocketing through the clouds, he ran into another flight of ships. Up, up he zoomed through the bursts of their machine guns, and then he roared down again in a mad power dive, cutting through the clouds like a meteor. The dark fog of the clouds tore apart before him. He was far behind the enemy lines. Under him was a burning ammunition dump. Sheaves of yellow sparks were wrapped in black, swirling smoke clouds. He was right over the dump, when it happened: a white, dazzling light, encircled by a blue corona, blotted out sparks and smoke. He had a sensation of momentous, searing heat, and then a sickening feeling told him that his ship was catapulted upward. Instinctively he pulled the rocket lever. The ship obeyed. Zooming upward in a steep angle, it shot through the darkened atmosphere, carrying him away from an immense crater, over which a mad vortex of smoke, dust and debris raged.

He set out for his field with full rocket power.

He made a landing on one wheel and stumbled into the commander's office. "Large, white flash explosion in burning ammunition dump at 30.84 by 20.23."

The major jumped up from his desk. He did not know what the "white flash" meant, but the orders from headquarters had given this reconnaissance the greatest importance. "Are you sure?"

"Yes sir. A huge, brilliant white flash, with a blue corona, followed by a dust tornado."

Another flyer came in. "I saw Feller's ship come down in a cyclone. It did look artificial to me. There was a white dust falling, thirty miles in the neighborhood. I never saw anything like it before."

The report reached headquarters at 12:21 p.m., coming almost simultaneously from three flying fields and one tele-observer.

GENERAL HOWARD received the message at the staff officers' mess table, listening to a spicy story that one of the younger officers was telling. Nobody noticed that the general did not laugh, he hardly ever laughed. Nobody took it seriously, that he and his side-de-camp left the table with a short "Excuse me, gentlemen."

But when they returned to their desks thirty minutes later, they noticed that something was happening. The young staff officer, that had been telling stories during the luncheon hour, paled, when he began to study the

typewritten sheet on his desk. "Gawd, it will cost something."

"Forced reconnoitering attack from base Liberty, thirty miles wide. The objective, plateau of Hazelwood E batteries, Caterpillar Ridge and Coffinlid, five miles south of third enemy position, has to be reached under all circumstances. Retreat after reconnaissance in echelon, demolishing enemy positions as much as possible and salvaging specimens of enemy equipment and ammunition. Artillery preparation begins at 6:12 p.m., November 16."

"My God, they must be crazy, that is tonight."

"Utmost fire rapidity from 7:15 to 7:45. Counterbattery work with 50% GR 19 gas shell. 7:30 p.m. zero. . .

"Tank battalions— Mole tank battalions— Projector units— Mobile batteries— Shock troops— Flame projectors— Ground combat flights— Trench mortar battalions . . ."

There was no end to it. The young officer scratched his head. "Bill, pack up. Liberty for us tonight."

The typewritten sheet closed with the underlined words: "Green dart ammunition is not to be used under any circumstances, except on special order. For troops out of communication this order is three green-white star lights in fast succession. Green dart ammunition is not to be fired at targets less than fifteen hundred yards from our first lines for light artillery and not under thirty hundred yards for artillery over four inches inclusive."

There was feverish activity at headquarters and in the army, division, brigade and regimental staffs. Innumerable details had to be attended to in a few hours. Orders, concerning the attack in the Liberty Salient and instructions about the use of green dart ammunition went along the entire front. Reserves were hurried from the reserve depots and from other sectors of the front. The railroad tubes under Liberty began to transport men and material to their utmost capacity. The strategists, planning the attack, knew that the first attacking forces eventually would break down before the defense of the enemy, and that only a number of successive shocks with fresh forces could effect a penetration to the contemplated depth.

At five o'clock in the afternoon the company and battery commanders in the Liberty Sector instructed their men. Guns were inspected and oiled, ammunitions were cleaned and stacked up. The artillery in both flanks was to concentrate its fire, supporting the attacking divisions. Mole tanks had been drilling forward under the enemy positions since three o'clock. A dense wave barrage, screening all communications, had been kept up since one.

At six o'clock General Howard took his combat station, a narrow concrete tunnel under an innocent-looking grove of pine trees two hundred miles behind the front. The fringe of the woods was a continuous chain of communication apparatus of all types, concealed carefully and cleverly.

At 6:10 an old man with the face of an Egyptian mummy, the collar of his black overcoat almost concealing his features, entered the tunnel cabinet of the general. The Council of Four had sent one of their members to the front. A large map, bristling with stick pins, covered a table.

At 6:12 the artillery preparation began. The stone was rolling, the battle under way. Reports, sifted and arranged by different agencies began to reach the general. "Artillery preparation progressing on schedule. Enemy activity weakening, his open batteries being silenced by GR 19 gas. His automatic and enclosed mobile batteries increasing fire rapidity. Our fire concentrations on tunnel entrance and tunnel areas effective, as far as recognizable. Observation uncertain."

The old man in the black overcoat stirred. "Is GR 19 the gas with that nasty surface effect?"

"Yes, Your Excellency. We use it only for counter battery work, because our men are not fully protected against it."

"Hm. Sacrifices have to be made."

At the front two hundred miles away the murky evening sky flickered with muzzle flashes. The reports of firing guns and bursting projectiles had melted together into a monotonous, vibrating drone. The areas, where the fire concentrated, were whirlpools of shifting debris, fire, dust and torn bodies. Where the brown clouds of GR 19 gas swayed, men died a horrible, agonizing death, the gas eating slowly through uniform and skin into the living flesh.

THE old man in the tunnel coughed. "General Howard, I know that the generals of the old times used to win their battles smoking cigars. But they fought in the open air. Would you mind to stop smoking? We are modern people today, we don't need these poisons. I shall see that the first peace legislation will bring back tobacco prohibition. And please call my butler. It is dinner time for me."

The old man munched crackers and milk. "What became of this professor, that invented green dart ammunition?"

"We had to put him in a work battalion. His discipline broke down."

"Hm—" the milk trickled down from the old man's open mouth. "Broke down. Bad. Discipline is the main thing. Serves him right. Well, he brought us in a mess. Dreamer. They always do."

The general chewed his cold cigar. "Your Excellency, our brave troops will decide it tonight. Specimens of ammunition will be in our hands before morning. And if we find that the secret of green dart is known to the enemy, we will strike at once, strike with all force. We are ready to strike now, if it must be. There will be victory or death." The general's grey hair bristled, his face reddened. His grey eyes were round and fascinated.

A crumb of cracker dropped from the old man's blue lips. "Is this dugout deep enough? Suppose somebody dropped a heavy green dart bomb on us."

"We would die, Your Excellency, for our country."

"General Howard, you are careless. I don't want to die. The older I get, the more I want to live."

At the front the artillery was working with utmost rapidity now. Trench mortar, tank and mobile batteries joined the fire. Electric projectors were turning iron wires into white hot, vibrating coils. Slowly the hands were progressing on many watches.

Mole tanks began to break into the communication tunnels. Huge tank formations left their burrows, moving into position for the attack. Ground combat flights, observation planes, pursuit ships and bombers took the air.

Zero hour. Black monsters crawling through the night, giant metal birds rushing through the air; huge burrowing insects breaking into steel and concrete-lined tunnels,

a solid curtain of dark, flashing shell bursts slowly moving southward. And men—living men, encased in grotesque armor—walking, running, stumbling and falling; torn to jagged pieces of flesh; suffocated in nauseating, burning gas waves; seared with stabs of electric energy; burned in jets of flaming, enveloping liquid; men moving in a nightmarish dream world, fighting and dying. The crazy, rattling laughter of machine guns, the crackle of rifles, the thunder of hand grenades and cold steel in living flesh.

Waves of men and machines, striking and going down before the machines of the defenders. Always new waves striking like the shocks of a battering ram in the wall of defense. "The objective must be reached." Overturning, burning tanks, glowing red hot, their crews roasting inside. Tumbling metal birds, crashing down. New waves of crawling centipedes in the night, of roaring metal birds, of men bent down under the load of new weapons. Rows of colorful lights, rising into the inky sky like shining standards, and men following them.

The attack was progressing on schedule.

The first and second positions had been taken at midnight. The attacking forces moved on doggedly, slowly, with enormous losses. Reserves were following up, regiments of children and cripples. If they could not fight, they could die.

At four o'clock in the morning General Howard received the report, that the attack had stopped before the third positions.

"Put all reserves in, the objective must be reached. The artillery fires away the last rounds of ammunition, if need be, saving only green dart."

New droves of men and machines moved on. A glowing, crackling projector barrage was ground into the mud by tanks. The crews sacrificed themselves. Locking the controls of their machines on forward, they kept on firing from the gun turrets, until heat and electric energy had killed them, while the machines, glowing red hot, ground on and on, until in and behind the projector barrage they burst into flaming explosions.

In the grey of dawn the third position was taken. Tanks and men moved in the open.

From the Hazelwood Plateau, Caterpillar Ridge and the Coffinlid before them the yellow flashes of muzzle fires stabbed into the grey. Up there was the objective of the battle. They moved on. And then the happenings took place, that made this battle the last one, the Battle of Armageddon.

The Hazelwood Plateau, bearing its name from a forest, that had crowned it years ago, had been chosen by the enemy as position for a number of automatic batteries. These batteries, though not in direct view of their usual targets, commanded the valley between the plateau and the third positions with direct fire. The electric machinery of the batteries had been put out of action in the early part of the night. The gunners had left their gas-tight tunnels, serving their guns by hand. They had suffered comparatively little from gas, as the batteries were situated high, but they had been cut up badly by high explosive.

In the left wing battery only two of the four guns under their heavy, flat steel cupolas had remained intact. The crews had been killed, except three young men and a lieutenant, a child of sixteen.

The tank battalions moved on in the valley below, beautiful targets, coming toward them. Clusters of men ran behind and between the machines. One of the young gunners dropped his hands from the smoking breech. "That was our last shell, Lieutenant. Only red dot ammunition left. I suppose they are going to croak us now."

The child in a lieutenant's uniform thought for a moment. The tanks, only three miles away, were coming closer. "Get the red dot stuff. Fred and Bill, you go down. The hand ammunition elevator is working yet. Frank and I work this piece."

The red dot projectile slid into the barrel. The hot breech snapped shut.

"Get the big one in front, Frank." The child had the lanyard in his hand.

The gunner took his eyes from the telescope. "Ready." The child pulled the lanyard.

CHAPTER XV

The Final War

THERE was a tremendous white flash in the valley, framed by a blue rim of electric radiance, and then a black crater yawned, where a tank battalion had been.

Behind the gun another red dot projectile clicked from the elevator.

The two children looked at each other with white faces. Then they pushed the second projectile into the barrel.

They kept on firing, faster and faster, until their ammunition, two hundred rounds, was exhausted. Then they broke down, sobbing over the hot barrel of their gun.

There was a whining howl outside. A huge white flash crowned the Hazelwood Plateau, and where the automatic batteries had been, was a crater.

The old man in General Howard's dugout stirred in his chair. He had been dozing. "Aren't they through yet, Howard? A fine mess this is."

General Howard's face paled. In the receiver was the clear, unemotional voice of an orderly: "Enemy is returning fire from Hazelwood Plateau with unknown caliber. Bursts white, without smoke, blue-rimmed flame. Reserve tank battalions HT 1216 and LT 1237 annihilated. Infantry battalions 2|53, 1 18 and 2 516 retreating with heavy losses."

The general gulped. Then he said with rasping voice: "All artillery is to use green dart ammunition at once. Highest fire rapidity for fifteen minutes or until ammunition supply on hand is exhausted. All air forces in all sectors turn out at once. Green dart material on all known targets, penetrating as far as possible, sacrificing machines if necessary. All fronts general attack orders under secret seal GD 352 . . . "

A lone, fast flying machine was flying toward the rising sun. Lieutenant Young had been on night duty, all machines of the Liberty Sector having been turned out for the attack. A crazy night was behind him with his machine soaring through flickering, reverberating darkness. He was so high now, that he had to use his oxygen tank. The roar of the artillery fire below had died down to a steady humming drone. He felt tired and half asleep in spite of the biting cold.

Suddenly he aroused himself from his stupor. Under him was the white flash. Another one and another. His ship rocked in the bumpy air. Distinctly he saw a num-

ber of green-white star rockets, and more and more, rising over the smoke on the ground. He knew, what this signal meant. "The end has come," he thought, "the power of the atoms is destroying the earth now." Over the enemy lines were red Very lights, rows of them.

And then the earth was ablaze with light, white, blinding light. His ship spun around in a mad whirl. He saw under him ships breaking in black, twisting clouds, the bowels of the earth opening, and everywhere this awful white light. It appeared in great, flashing blotches, fringed with the blue corona. The air became dark around him, the sun disappeared.

He turned his ship and darted ahead with full rocket power, away from the front. Under him flights of ships appeared and disappeared in dark clouds, that were crackling with electricity. Where the city of Liberty had been, was a flicker of white flashes in the black fog. The air became heavier and darker, he felt, how his ship rose and fell with the vicious gusts of a gale. A huge bombing plane, thrown up into this altitude, overturned before him, the wings flying in twisted rags of sheet metal.

And the world was swallowed in black, raging darkness.

The torpedo station CX 317, combat group LY 531, in the third lines south of Liberty had to stop firing after a busy night. The last torpedo had traveled southward, ammunition was exhausted.

Captain Sikorsky, pale and fatigued, turned from the control apparatus. "Thank God, that's that. Make out a requisition sheet for new ammunition, Thompson."

"Yes, sir." Thompson, a young sergeant, arose from the telephone switchboard in the corner.

"We will need ninety HE and thirty CBX, Thompson. Whoa, what was that?"

A shock had gone through the earth, rocking the tunnel like a boat. Sikorsky turned back to the control stand. "Feels like some new caliber, about the size of a boiler. Let's see, what the tele shows."

The sergeant called from the telephone. "Captain, staff LY 531 wants you."

The captain took the receiver. "Sikorsky."

"Yes, here Weller, LY 531. Orders from division. Fire away the green dart torpedoes. Never mind the wave barrage. Lock the controls on the Hillside dumps at 30.50 by 19.10. Hurry."

"Damned." The captain put the receiver back with a bang. "I wonder, what kind of a dirty stuff they have in those torps. Well, here goes."

While his commands went through the speaking tube, the earth shook again, stronger and repeatedly.

"Fired." The click and hiss in the torpedo room announced that the first green dart was traveling southward.

"Another one, same thing. Damned, what is this, an earthquake?"

THE view-plate of the tele-observer flashed into a white explosion. The old scientist jumped up from the shaking table. "Thompson, did you see it? Come here."

The sergeant, white-faced, stood beside the professor and saw the surface of the earth dissolving into light flashes.

"Fired," it came from the torpedo room.

Sikorsky said mechanically: "Another one, same thing." For a moment he knew that a catastrophe was upon the earth.

In the next second the entire combat group LY 531, tunnels, power plant, torpedo station, staffs, men and weapons, was blown into nothingness by a heavy red dot projectile, that left a crater two miles in diameter.

At the north side tunnel entrance of Liberty a work battalion was cleaning the debris away, that had fallen during the night, torn loose by a torpedo attack. From the front came a sound like the surf, that thunders over a rocky coast, whipped by a gale. The morning sky overhead darkened.

A cripple, his hunched figure clad in a ragged uniform, held the shovel in trembling hands. "The time has come, the power of the atoms is loose," he muttered.

A sergeant brought a heavy stick down with brutal force. "Shut up, you skunk, work, don't talk. You seem to think you are too good for this, because you were a colonel, you . . ."

A whistle shrilled. "Bombers, cover."

The little hunched man crouched on the ground. Looking up, he saw a flight of silvery ships, coming closer in V formation. The dark clouds overhead had not yet obscured the morning sun, silvery wings gleamed on a dark background.

The little man saw distinctly that a trap opened in the smooth body of the foremost silver bird. One, two, three shimmering fishes fell swaying, their noses pointing toward the ground. The cripple knew clearly: "Now the end comes."

His last thought, when a white flame enveloped everything, was: "It is not painful."

General Howard, still in his combat station, swore into the telephone. There was no communication to the front. One connection after the other failed, blotted out suddenly. Now Liberty, the base of the night attack, did not answer any more.

The old man with the mummy face, hunched in his arm chair, kept on repeating: "A fine mess this is, I'll have the responsible men court-martialed."

The ground began to tremble, cracks appeared in the concrete of the tunnel. The general bellowed into the telephone: "Have my plane ready, I go to Liberty myself."

There was a turmoil of excited voices in the receiver, then the telephone was dead. A fearful convulsion went through the earth.

The general wrenched the iron door open. "Orderly, orderly." His voice echoed back from the reverberating walls. Big lumps of concrete dropped from the ceiling of the corridor. The electric light went out. General Howard stood in absolute darkness, two hundred feet under the surface of the earth. Somewhere in the dark shrieked the cracked voice of the man with the mummy face: "I don't want to die, I don't want to die."

Then the light came, immense, dazzling white light.

The fire at the fronts, the flicker of white flashes, had died. Men had served their guns, until they themselves had seen the flash and had felt the heaving wave of destruction, that blew them into oblivion. Along the entire front every focusing point of action was a single, bottomless abyss. Craters, that covered square miles, their smoking bottoms reaching into the bowels of the earth, had changed the combat zones into a fantastic moon landscape. Single, tiny human beings, that by a freak of

the explosion forces had escaped destruction, crawled through a strange, gigantic world like helpless, insignificant insects. There were no front lines, there were no commanders, there were only these little human beings, clinging to the torn body of their mother earth, while a gale of incredible velocity raged over them.

And the age old sickness of mankind, having burned itself out in the front lines, uttered its last ghastly effects farther and farther away from the front, all over the face of the earth. Tossed and whipped by the tempest, flights and flights of air ships fought their way to their destinations. Their commanders thought of orders, that had been given them, before they left the ground. In years of spy work and patient observation all life on earth had been mapped carefully as "enemy activity." In the last weeks of the struggle, while the factories had been making green dart and red dot ammunition to the limit of their capacity, plans had been worked out on either side, to make the annihilation of the enemy complete. And now these plans were carried out by men, who had been learning through years and years, that the only human virtue was unscrupulous, unrelenting discipline.

These plans were carried out, after the ground commanders, that had sent the ships, were dead. They were completed, after the men, in whose power-mad brains the plans had originated, were crushed in their deep concrete dugouts. There were no staffs, no governments, only these orders, that had to be carried out. And the ships fought on through the whirling gale, breaking down barrages by the sheer explosion force of their bombs, spreading the death of the white flash into the farthest corners of the earth, until they themselves crashed down from the air or burst into sheaves of red flame, when they attempted to land in this raging world.

ON the seas the bulk of the navies met in a battle that lasted fifteen minutes and was fought over a distance of twenty miles. Huge submarine battleships were blasted under water like bubbles by the force of the white explosions, lifted from the sea by rising whirlpools of water and smashed in foaming torrents. The small forces that, spared by lucky accidents, set out for the home ports, were annihilated by the forces of nature, that broke loose in a ferocity never seen by man.

Volcanic tidal waves, land slides and earthquakes of never seen proportions changed the outlines of the continents. Long extinct volcanoes belched smoke and ashes, beds of glowing lava creeping down their slopes. Nature completed the work of destruction, after man's weapons had burned out.

Young's ship fought on through the thundering darkness. He zoomed higher and higher, until the ship's ceiling was reached. He tried another rocket blast. It became lighter around him, and then a pale, yellow sun appeared in the dust. The sun told him that he had been flying in the wrong direction, he had followed the front lines. "I must be hundreds of miles west," he calculated, and turned his ship to the right. Under him, between shifting, racing clouds appeared a strange landscape. He circled undecided, he was lost.

Then his heart leapt with new hope. He saw a coast line, the black sea thundering with white breakers over the beaches. He followed the coast. There was the mouth of a great river. Under him irregular flocks of flying machines tossed in the wind, coast batteries and docks burst into white flashes of light.

He followed the river upstream. Sometimes he lost it. Diving and circling he found it again. Once he was in a formation of enemy aircraft. They did not take notice of him, fighting their way to their destination. The river branched. He followed the left branch. Then at a crater field, that had been a township, he turned to the right, flying low. There, before him the squat, massive concrete buildings of the laboratory offices gleamed white in a sun ray, that broke through the shifting clouds.

He circled, trying to find a landing place. The concrete road, from the laboratory buildings to the helpers barracks seemed the only hope. With clenched teeth he brought the machine down, flying into the gale. The concrete road leaped up to him. There was a shock, a crashing, grinding, and the machine stood. Wrenching the cabin door open, he leaped to the ground.

Behind him the gale overturned the machine and carried it away like a bush of tumble weeds. Before him the sheet-iron barracks of the helpers rose into the air. He fought on against the wind, finding a foothold in the ditch beside the road. The foundations of the barracks, blown clean, showed no sign of human life.

He stood, torn by the tempest, holding himself to an iron post, calling into the roar of the elements: "Irene."

Over there, near the barbed wire fence something was stirring. He fought on, blinded and bruised, crawling and worming. From a narrow trench in the field leaped a slim figure in a helper's uniform. Almost carried by the wind, she was beside him: "Fred."

Holding each other, they climbed back into the trench. A dozen helpers and Sergeant Froben crouched in it. The gale shrieked over it.

Irene held her husband embraced. She brought her mouth to his ear. "Fred, we must live for our child." He nodded. There was no use speaking in the roar of the wind.

Three airplanes appeared in the sky, riding the gale with incredible swiftness. The reports of the laboratory vortex batteries fought feebly against the noise of the tempest. The laboratory buildings burst into white, dazzling light. The ships, overturning in the air under the force of the explosion, came down tumbling, carried away by the wind.

Darkness spread over the grounds. Young, holding his wife's head down, covered her with his body. Earth and debris rained from overhead. Dust clouds blotted out the world.

Half-buried in their little trench, protecting their heads in their arms, choked and blinded by dust clouds, a little cluster of humans fought to stay alive.

And the tempest raged on and on.

CHAPTER XVI

New Beginnings

RAIN fell in sheets from the dark sky. The gale had died after three days. The surviving humans stirred and, half starved, set out searching for food. Like animals they prowled around the ruins of human habitations.

Young crossed the desolated stretch of ground, that had been the laboratory test fields. With him were three of

the helpers and his wife. The cripple Froben had stayed back with the rest, trying to build some kind of shelter against the rain.

At the edge of a huge crater that was slowly filling water, stood the ruined buildings of the provision depots. Mangled bodies were pinned under the fallen rafters of the roof. Half buried under rubbish and debris were boxes and sacks with food stuffs.

The four women made bundles of the things, that Young dragged together. There was the silent understanding that he was the leader, because he was the strongest and most resourceful.

Outside, in the rush of the rain, was the grinding of tank caterpillars. The outlines of a man, a captain in the uniform of the tank battalions, appeared in a broken hall way. He approached, a pistol in his hand.

"I have been looking for that. Put the stuff in the tank and come along. I need four men for a tank crew."

Young backed to the wall. "Captain, this is over now. I saw the fronts break."

The captain raised his pistol. "I show you that there is discipline left. I count to three . . . "

There were confused voices outside. A dozen men, ammunition workers, groped into the dark hall way. The captain took position in a corner. "Stand back. I have a pistol in my hand. I am going to rip the first man moving with explosive bullets. Hands up."

There was a couple seconds of silence. Suddenly an iron bar whistled through the darkness. One of the workmen, standing close to the captain, had brought his weapon down with desperate force. In the next moment the officer's body was beaten and stamped into a shapeless mass.

The man with the iron bar, who seemed to be the leader of the others, wrenched the pistol from the dead man's hand. "He is through with his discipline," he said to Young. "Where do you come from?"

"From the front. There is nothing left up there."

The workman looked over the helpers, that stood beside Young. "Guess he is OK, boys," he said to the other men. Turning to Young again, he explained: "There ain't much left back here either. We are from the Brookfield Amm Plant. They must have missed us, they seem to have blown up all the other plants in the neighborhood. That thing, that they dropped a mile from us, wrecked all the buildings anyhow. Then we cleaned up the place. A couple of foremen, officers and SS men got brained. They made me the chief. We were after food and SS men now.

"All right brother, we won't do you harm. We take some stuff along, tomorrow we go looking the other way. If we find food, we leave you the rest here. Any more with you?"

"Sixteen all told."

"OK. You'll find enough here. There are about fifty left in our place, thirty of 'em women. Come on, boys, let's see, whether we can catch any of these SS monkeys alive. We gotta clean up."

They disappeared between the ruins.

Young and his party set out for their camp, loaded down with supplies. They also had picked up several rifles and cartridge belts. Young cautiously examined the tank, that was parked outside. It was empty.

Irene shuddered. "Hasn't there been enough war? I wonder where that captain came from."

Young picked his bundle up. "He probably was in the tank with a test crew, when the last raid began, and he weathered the storm in it. Well, he is done for, he and his kind."

Behind them were the yells of the enraged workmen, that had found a victim.

"Look." Young pointed forward. The friendly light of a fire shone through the dusk. "Froben built a fire. Good that he is a smoker."

Froben and his crew had put up a low hut, patched together of broken rafters and pieces of sheet iron, weighted down with concrete lumps. A fire burned before the entrance under the overhanging roof.

"It is as it was millions of years ago," Irene said. "The tribe gathers around the flame, under the protection of the strongest man, the chief. You are the chief, Fred."

"Yes, and you are the chief's wife, you will cook the supper at the fire of the tribe. Here is food, Froben."

It ceased to rain during the night. The workmen, returning from their raid stopped in. "Not much left," the leader said. "They blew the place clean all right. We found only two police yokels and one major of the chemical labs. He got snooty, and we put all three out of their misery. Last we found this fellow here." The men carried an improvised stretcher. "He says he is a doctor. His leg is broken. Do you know him?"

"Doctor Flagg," one of the helpers said. "He is a good man."

THE wounded man gave her a thankful look.

"Well, he looked all right to us." The workman turned to Young. "You can keep him here, if you want to. He will be all right later. We go back to the plant. If you are the chief of this bunch, you better come over tomorrow, and we take it up with our council, how we divide the food supplies. It's about an hour's walk from here. Seems as though we are the only ones alive in this neighborhood."

"I will be over at noon, tomorrow."

"OK, brother. We'll treat you right. Anybody, who don't want to make war, is welcome with us. So long, sisters."

The men disappeared in the night.

In the morning the sun was shining. Young had put the doctor's leg in a splint. Doctor Flagg was a young man, who had been gassed at the front a year ago. An act of kindness to one of the laboratory helper girls was repaid to him now.

Before noon Young went to the Brookfield Plant. His wife went with him. "As interpreter," she said, "you are too much of an officer for them."

Brookfield had been one of the smallest government plants. Most of its buildings were wrecked by a bomb that had fallen a mile north of it.

The envoys were received solemnly and with a certain kindness. The workers had elected a council of three men and three women beside the chief. It was agreed that the line of the barbed wire zone north of the testing fields was to be the dividing line for the respective territories. In case one of the two "tribes" was attacked, the other tribe was to help fighting. Anybody who did no harm and confessed himself to the principles of Upman's Free Conscience Doctrine,* was to be friend. All other

*Devised by Leo Upman, a writer and hater of war, before the beginning of the conflict. He tried to re-establish individual liberty for men, against the encroachment of society.

regulations within the tribes were left to the chiefs or their councils.

The "Brookfielders" agreed to send ten of their men, that were to help put up shelter of the "Labs" before the winter. For this help the Brookfielders were to be entitled to the services of the doctor. The treaty was affirmed by a handclasp of the two chiefs, and the Youngs returned to their camp.

The erection of a community house on the laboratory proving grounds was begun at once. Its site was near the Honeymoon Grove, overlooking the test fields. The finished building was a curious looking piece of patch-work, but it promised to give ample protection against the cold of the winter. A rough hearth for cooking was in it, and the provision bins were stocked with food preserves, salvaged from the ruins.

Young as the headman rationed the food strictly. He calculated, that with economy they could subsist on the salvaged provisions, until they would be able to raise new food.

It seemed that they and the Brookfielders were indeed the only humans that had staid alive in the vicinity. Only two stragglers, a man and a woman, came in during the following week. They were half starved and thankfully joined the colony, after they had recuperated from the hardship of a long, aimless journey. The man was an iron worker and the woman had been employed in a chemical factory.

Young examined the war machinery left on the proving grounds, and found two light tanks that were workable. He blasted one of the tanks after transferring fuel and munitions to the other one, and drove the remaining machine to the community house. This precaution proved to be of importance during the winter.

January brought cold weather. One afternoon, while the members of Young's colony were busying themselves in the house, making garments and simple tools, Dr. Flagg, who had been taking a walk, to exercise his leg, came running. He had seen a band of about a hundred men, armed with rifles and marching in the direction of the Brookfield Plant. Leaving Forben and the doctor for the defense of the house, Young started out with the iron worker and three of the younger helpers in the tank. Stopping behind the last ridge on the way to Brookfield, they heard that a battle was in progress. The fast tank swooped down on the marauding band that had attacked the plant, and decided the battle in a minute. Those of the attackers, that had not been killed, threw their weapons away and surrendered, but they were killed by the workmen, swarming from the plant, before Young could interfere.

The two chiefs of the tribes met again after the battle. When Young resented the killing of the surrendering marauders, the head man of the plant said: "They attacked us without provocation and killed two of our men before we knew it. They were after our provisions. There is no place on earth any more for this vermin."

Young had to admit, that the workman was right. The world had returned to savage ways of living, and if they wanted to survive, their ways of justice had to be savage also. The men of the plant hung the bodies of the marauders to poles, planted in a wide circle around their territory. A crude sign on each pole said: "This is the way we treat marauders."

In February a second, smaller band that, driven by hunger, prowled through the country, turned back, when they saw the gruesome markers beside the road. A dozen men and women came in unarmed, begging for food and shelter. They were received, fed and eventually divided between the two colonies, although the provisions were meagre enough as it was.

IN March a combined expedition of the two colonies was undertaken, to reconnoiter the country and to find food, if possible. Young's tank crept slowly before the expedition, a white flag waving from a pole over the gun ports. Twenty armed men followed it afoot.

The country was desolated, razed by the gale, or torn by the white explosion. All trees were down, houses were reduced to scattered piles of bricks.

On the third day of their journey, the scouts of the expedition saw two men, running swiftly cross country. The tank, getting up speed, followed them easily to a camp, where about a dozen men and women lived in the state of complete savagery. When the people in the camp saw the tank, swooping down on them, they fled with great agility in different directions, ignoring the white flag of truce over the war machine. The camp was at the edge of a broken down forest, and the tangled boughs of the fallen trees, offered a perfect retreat and hiding place. Artless fox holes in the precipice of a ravine, that were filled with dry leaves, had been the sleeping quarters. Around a fire human bones and skulls told a gruesome tale of cannibalism. The expedition had to resume its march, without catching another glimpse of the fugitives.

On the fifth day discoveries of great importance were made. The first was a number of sheep, that had survived the catastrophe. The men of the expedition succeeded in catching five of them alive. The other discovery was fields with potatoes and corn, that had not been harvested. Though part of the crop had spoiled during the winter, enough remained, to fill the tank to the last vacant nook.

After this the expedition turned back, as the fuel in the tank began to run low.

They found the home camps unmolested, and after dividing the spoils of the expedition, the two communities resumed their daily routine of work. Building, salvaging, planting and sowing began to improve living conditions.

In April Young built his own house between the fallen trees of Honeymoon Grove. The devastated woods became green again. Proudly the chief took possession of his home, that was built on the foundations of the cottage 57, where he had spent two sad and happy weeks with his bride.

Dr. Flagg married the helper girl that had spoken for him, when the workmen decided about his fate. He built his own house next to Young's, and Young was glad about the new neighbor, for Flagg had proven himself to be a well-educated, intelligent man with a cordial and honorable character.

As the summer came, increased animal life became apparent. Rabbits were abundant. The modern savages made bows and arrows, to save the ammunition of their firearms for the eventual necessity of defense. Men learned again the primitive ways of hunting, while women learned to prepare skins, to grind corn on crude hand grinders and to bake bread in the hot ashes of the hearth fires. As their industry began to conquer the want, their bodies, that had been weakened by the poor and arti-

ficial food of six war years, grew healthier and stronger, their cheeks filled out and their dimmed eyes began to shine with new hope.

In June the first child of the colony was born. It was Young's and Irene's, a healthy boy who, closing his little fists and straining his voice, announced a chief's son's intent to make the human race survive and conquer.

Young was at his wife's bedside. Irene looking down on the sleeping little bundle of humanity beside her, said: "You shall never be a soldier, little man, never."

And the chief said: "If he has to fight, it will be for the freedom of conscience."

Summer had come, the two little colonies had conquered want, nature began to overgrow the ravages of the man-made catastrophe, but still there had been no communication from the rest of humanity.

In the late summer Young was down on his knees, working alone in a potato field. His body was sturdy and young, his face healthy and weatherbeaten, but his hair was grey. He wore an old uniform, and a rusty army rifle was beside him on the ground.

A lonely, small flying machine appeared in the sky, circled and landed a few hundred feet from the working man. He reached for his rifle.

A single man alighted from the machine, an old man in clean, new clothes. The two men approached each other cautiously, then they stood, raising their arm in the age old gesture of peace. The old man from the machine was unarmed. The man from the potato field threw his rifle over the shoulder and asked: "Who are you, and what do you want, stranger?"

"I am Paul Weaver, emissary of the World Government, gathering the people of the world."

"What countries?"

"There are no countries anymore, there is only the earth and the Freedom of Conscience."

Young stepped forward, his hand extended. "Welcome, friend. I am Fred Young, headman of our small colony. Over there in the Brookfield Valley is another colony. That is all in these parts. Are there many, where you come from?"

"Most of them died. The great catastrophe killed most of them, and then great revolts put to death the last upholders of the war. The World Government was founded way in the north, where the man-made destruction had missed more people than here. Their aim is to preserve the remnants of civilization and to uphold peace and the ethic principles that were the true greatness of mankind before the war."

"We did belong to you, before you came. Come to my house. You must rest and eat with us."

The "house" was a primitive shack, built of logs, debris and patches of rusty sheet-iron.

Inside a woman arose from an artless chair. She held a child in her arms. Her eyes in the clear, healthy face were shining with the light of kindness. "Welcome, stranger," she said.

"This is my wife Irene and our son," said the man in the old uniform.

The emissary of the World Government stepped under the roof, that Fred Young had built.

"Irene means peace," he said.

THE END.

For the May Issue

in Addition to

"The Brood of Helios"

and

"The Venus Adventure"

we offer

"VANISHING GOLD"

by CAPT. S. P. MEEK

It has been many months since we have published one of Captain Meek's realistic and exciting tales of scientific wonders. With the world in chaos over the gold standard, and half the nations on the verge of financial bankruptcy, the value of the gold in a nation's treasury may determine the prosperity or poverty of its citizens. But suppose that gold were slowly, imperceptibly, but surely to vanish, to evaporate into the thin air? What would happen if no known cause were found? Capt. Meek's scientific detective turns his mind to this question with astonishing results.

"THE MOON MISTRESS"

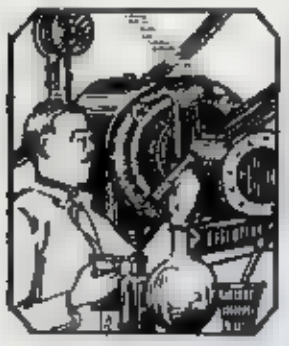
by RAYMOND GALLUN

follows the great success of his "Revolt of the Star Men" and his "Compulsion Ray." We do not see the moon here from the standpoint of a place for men to explore and fight with brutal nature, but as a habitable world for those who can turn the peculiar conditions on the moon to their own uses. This the "Moon Mistress" can do; and she causes a series of events bizarre, cruel, almost fantastic, but portrayed by Gallun as realities of tomorrow.

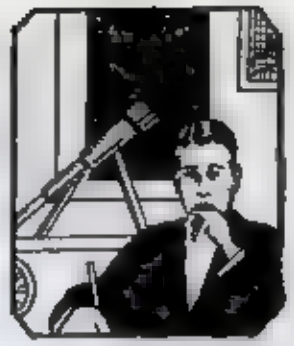
THESE STORIES

AND OTHERS IN THE MAY 1932 WONDER STORIES

ON SALE April 1, 1932



Science Questions and Answers



This department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical also, to print answers as soon as we receive questions. However, questions of general interest will receive careful attention.

Planetary Gravitation

Editor Science Questions and Answers:

Could you publish for me the surface gravitation of the various planets of the solar system?

Lloyd Walker,
Bloomington, Ind.

(The surface gravitation of the various planets can be computed by a comparison of their masses and diameters with the corresponding figures for the earth. Assuming the mass of the earth as 1, then if another planet has a mass of 5, with the same diameter, its surface gravitation will be five times that of the earth. But the surface gravitation decreases with the square of the distance of the surface from the center of the planet, so if a planet had twice the diameter of the earth, its surface gravitation will be reduced by two squared or by 4; so its gravitation with reference to that of the earth will be 5/4 or 1.25 times that of the earth.

Planet	Mass (Earth—1)	Diam. (Earth—1)	Surface Grav. (Earth—1)
Sun	321,950	109	27 9
Mercury	.04	0.38	[redacted]
Venus	.81	0.95	0.898
Earth	1.00	1.00	1.00
Moon	.012	.27	0.161
Mars	.108	.532	0.361
Jupiter	316.94	10.94	2.584
Saturn	94.80	9 136	1.137
Uranus	14.64	3.90	0.984
Neptune	17.16	4.16	0.992

To find what one would weigh upon other planets, multiply his weight on earth by the figure in the last column. Thus a 150 pound man would weigh 150 x 27.9 or 4185 pounds on the sun; 150 x .290 or 43.5 pounds on Mercury, etc.—*Editor*)

The Cosmic Ray

Editor Science Questions and Answers.

A friend of mine and myself have been discussing the cosmic ray as a possible menace to interplanetary travel. We are under the impression that cosmic rays can penetrate lead to a depth of eighteen feet, and would therefore be totally destructive to life outside the atmosphere. Is this wrong? Please give a few general facts regarding the cosmic rays.

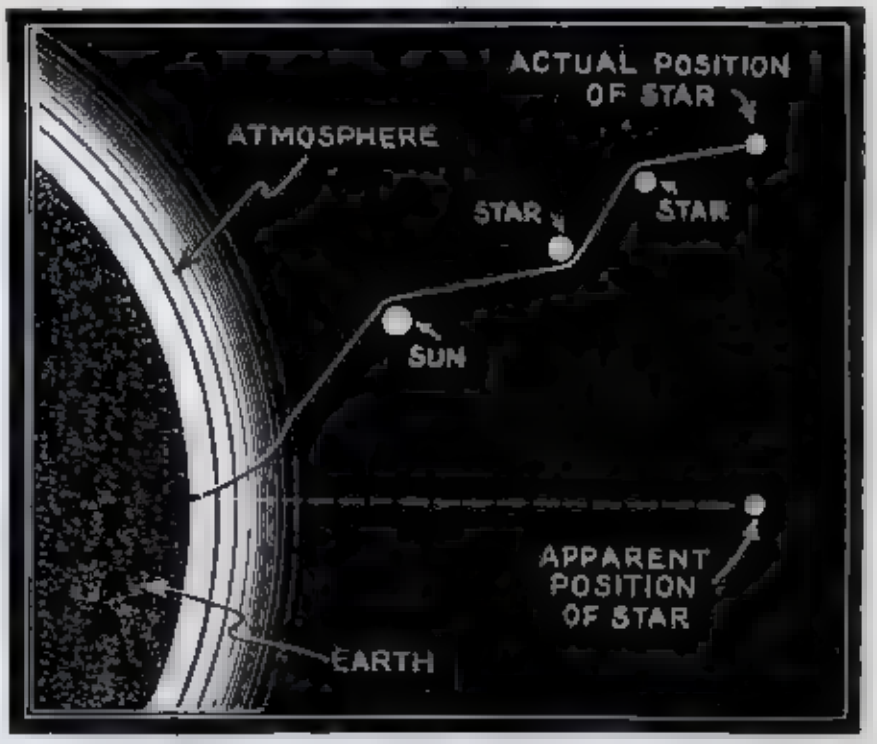
(Miss) Frieda Kolus,
3122 W. 56th St.,
Cleveland, Ohio.

(Cosmic rays are a form of electromagnetic radiation of an extremely high frequency and extremely small wavelength. Millikan, who discovered the existence of cosmic rays, estimated that the most penetrating have a frequency 100 billion times as great as light waves; and therefore a wavelength corresponding small. Naturally it is the smallness of the wavelength that gives the rays their penetrating power.

They are quite definitely believed to originate outside the atmosphere, in fact, even outside the solar system. And their penetrating power is so great, that after they have broken through our atmosphere they still possess energy enough to penetrate 200 feet of water or 18 feet of solid lead. They must move at an enormous speed, probably approaching that of light.

Opinion upon their destructiveness to life differs considerably. It was believed that if life ventured beyond the protecting atmosphere of the earth that it would be instantly destroyed, as though it had been subjected to the full blast of the entire energy of radium. Professor Piccard, however, reached a height of ten miles, where only 1/10 of the atmosphere was above him, and suffered no ill effects from cosmic rays. He plans to repeat his flight, and other flights ten to thirteen miles above the earth are projected in the near future, that should yield important information about the effect of the rays upon living organisms. Rocketeers at work upon stratosphere rockets plan to send up living things, perhaps rabbits or mice to a height of twenty or more miles to test the effect of the cosmic rays.

In recent months the cosmic rays have enlisted to full attention of Dr. A. H. Compton, noted physicist, who believes that in their study he may find the secret of atomic energy. Compton will study them from mountain tops in various parts of the earth to determine if there is a great enough variation of their intensity in different places, so that some chart of their source may be obtained. Robert H. Millikan plans to send balloons with recording apparatus to a height greater than ten miles to study their intensity at great heights. The cosmic rays have thus been viewed from two points of view: as a possible method to release atomic energy, and as a barrier to interplanetary navigation. A third point of interest is their relation to the fate of the universe. Sir James Jeans believes that they result from the breakdown of matter into energy in space, and that the universe is thus running down. Millikan believes that cosmic rays result from the building up of hydrogen and other light elements into heavier elements, and that the universe is thus replenishing its energy. The future should tell who is right.—*Editor*)



Showing how the "Einstein Effect"—the bending of light rays near a sun and their refraction through the earth's atmosphere—gives the far-off stars a quite different position in the heavens from that which they really occupy.

Light Rays from Space

Editor Science Questions and Answers:

The light of stars appears to come to us in a straight line; but is this really so? Aren't the rays refracted somewhat through the atmosphere?

Stephen Weingartner,
Bronx, New York.

(Light rays coming to us from distant stars perform so many convolutions that it is a wonder that astronomers can really place the location of a star in the heavens. For its apparent position, that is the position it seems to us to occupy, may be very much different from its real position.

In the first place the light leaving the star must pass through interstellar space. Although space is practically a vacuum, it is not entirely so. And although light rays passing through five or ten light years of space may not be affected much, still when light rays pass through 100 to 100,000,000 light years, the cumulative effect of the matter in space with the change of density of matter in various spots is sure to affect the course and direction of the rays.

Then there is the Einstein effect, the attraction of light rays by suns. The light rays passing through space, may pass close to many stars on its way to us. It is therefore drawn out of its course by each new sun it passes near, and this includes our own sun. Finally it strikes our atmosphere and is refracted through it, just as a ray of light is refracted through water. And due to the changing density of the air, the refraction continues through the atmosphere until the ray reaches our eyes.

The path that a light ray takes is shown in the accompanying illustration, and is obviously far from being a straight line.—*Editor*)

The Fourth Dimension

Editor Science Questions and Answers

Several of the readers of your magazine wish to know why scientists believe there is a fourth dimension. Could you explain?

We would enjoy seeing this department grow to its just size.

William Gibbs,
Los Angeles, Cal.

(The fourth dimension has been much misused in general conversation, and even in fiction. Its original meaning, that given to it by the mathematician Minkowski and Einstein, is almost lost in the interpretations that have been placed on it.

Hermann Minkowski (1864-1909) stated in 1908 in his book "Space and Time" that we must revise our notions as to the independence of space and time, and must consider them together and instead of separate entities. Einstein incorporated Minkowski's views in the Relativity Theory, stating that time is a fourth dimension, to be added onto the three dimensions of space. Thereby interpreters acclaimed the existence of a fourth dimension. There is a difference between saying that "time is a fourth dimension" and saying that "there is a fourth dimension of existence."

In the days before Minkowski, when we spoke of space, we could define our position by saying, "I was on the fourth floor of a building at the corner of X and Y street." In other words we could define our position in three planes, length, breadth and height. Minkowski and Einstein stated that such a statement could have no meaning: that we must say, "I was ... etc. on the fourth floor .... at half past five." In other words we must add the time element onto our position in order to define it.

Time, in other words, is just as relative as space, and the flow of time is just as relative as the flow of a stream. To explain:

Camille Flamarrion in his book "Lumen" has his hero upon a star many light years from the earth, say 100. Given sufficient power of sight to see the earth, Lumen saw what was taking place upon the earth 100 years ago. The time of Lumen and the time of the earth at that moment are therefore different.

(*Continued on page* 1289)

IN this department we shall publish every month your opinions. After all, this is your magazine and it is edited for you. If we fall down on the choice of our stories, or if the editorial board slips up occasionally, it is up to you to voice your opinion. It makes no difference whether your letter is complimentary, critical, or whether it contains a good old-fashioned brick bat. All are equally welcome. All of your letters, as much as space will allow, will be published here for the benefit of all. Due to the large influx of mail, no communications to this department are answered individually unless 25c in stamps to cover time and postage is remitted.

He Would Not Explode

Editor, WONDER STORIES:

Two of your correspondents, Messrs. Kaletsky and McCutcheon, have attacked our story "Exiles of the Moon", on the ground that Dore Swithin should have died immediately in outer space upon being ejected from the space ship because of the total lack of pressure.

I note further that these gentlemen have not questioned the even more unbelievable statement that Dore Swithin was not frozen immediately to death in the absolute cold of space. This no doubt is due to the fact that we were very careful to document this seemingly astounding discussion with complete scientific formulae and data.

Nevertheless it is quite true that the total lack of pressure would not have any immediate tragic results upon a human being in a vacuum for the short period that Dore Swithin was so exposed, less than four minutes, in spite of the good deal of nonsense that has been written upon this question.

It has been widely assumed, without question, that in vacuo or near vacuo the human body would explode forthwith. The analogy is generally used of a deep sea fish brought to the surface of the ocean and promptly exploding in the more tenuous medium. This analogy is false, for the reason that the deep sea fish, accustomed to and living in an environment where the pressure is literally thousands of pounds to the square inch, is transported suddenly to a mere 14.7 pounds to the square inch, making a ratio of many hundreds to one, whereas a shift from 14.7 pounds to the square inch to absolute zero of pressure is an inconsiderable drop in comparison.

Furthermore, we have very definite statistics and experiments to disprove this unfounded assumption. Man has achieved heights of 27,000 to 28,000 feet in climbing Mt. Everest without dangerous consequences, in spite of the fact that the atmospheric pressure at those high levels is only 3 to 4 pounds to the square inch. Lieut. MacReady reached an altitude of approximately 8 miles in establishing his world's record for altitude flying, at which height the pressure is only 2.4 pounds to the square inch, without other than what may be termed comparatively minor discomforts.

There is no earthly reason for believing that an additional drop of 2.4 pounds to the square inch would make all the difference in the world or that the human body would suddenly explode with the last withdrawal of pressure.

But there is even better testimony at hand. Surely everyone that has taken a high school course in physics has been treated to the interesting experiment of a mouse deposited in a vacuum bell and the air completely exhausted. Usually the mouse remains in the vacuum for thirty seconds to one minute and then the air is allowed to enter again.

It is noteworthy that in no case has the mouse exploded or suffered the horrible effects deemed associated with vacua. In fact, in a goodly percentage of the cases the mouse recovers, just as active and spry as before, and without any visible ill effects. The ear drums are not torn open nor the vital organs disarranged.

Furthermore, two members of the American Museum of Natural History conducted experiments with the most fragile insects, including butterflies, in vacuo. They found that after subjecting these most delicate organisms to vacua for periods up to 4 minutes, a fair percentage would recover without any ill effects. The results of these experiments are incorporated in an article in the *Scientific American* which appeared some time during the past year.

It is quite evident therefore, that Dore Swithin's exposure of less than four minutes to the vacuum of space would not result in his instant explosion and that there would be a fair chance of his survival. Men submerged in water for periods of over 10 minutes have survived with the use of the pulmotor. It must be remembered that Dore Swithin did not emerge scatheless. The story specifically set forth that the surface capillaries had been broken, that his face and body were terribly congested, that there was bleeding from his mouth and ears, and that it took him a long time to recover from his frightful experience.

In conclusion let me state that Mr. Zagat and myself have been very careful of the science in our stories, trying our best to make it authentic and plausible. In particular the exposure of Dore Swithin to the absolute cold and absolute vacuum of space was carefully thought out in advance. Both of these interesting subjects have already been made the subject of reports by the writer to the American Interplanetary Society, copies of which may be found in its Bulletins.

Nathan Schachner,
New York, N. Y.

(Mr. Schachner's reply to his critics is forceful and based, we believe, upon science and logic. The exact effects of a total vacuum upon a human organism should be quite important to future interplanetary travelers, and the light shed upon it by Mr. Schachner's researches, as reported to the American Interplanetary Society, seems to present a new face to the problem.

If any of our readers do not accept Mr. Schachner's conclusions, we would be glad to hear from them and will print letters which tend to prove him incorrect.—*Editor*)

It Lends Inspiration

Editor, WONDER STORIES:

As a constant reader I wish to assure you that the "narrow-minded" brickbat written by Mr. Schwartz of New York City appearing in the February issue is absolutely the most imbecilic and insulting insinuation I've ever been faced with. (You see I am taking it personally.)

Let me tell you, Mr. Editor, some facts which apply not only to myself but to hundreds of others. I am passing through that physical change known as adolescence. At this time I am knowingly and unknowingly picking out the objects and habits which are to remain with me the remainder of my life. And I am knowingly picking out WONDER STORIES.

Your stories, no doubt, will not be fulfilled to the word but the basic principle back of each must and will be discovered. May I say that it is a positive fact that your magazine lends inspiration to a young fellow. It makes him think and dream of things to be discovered and found in the great field of science.

Now about this being "wide-mouthed." We, Mr. Editor, are not wide-mouthed. And, pardon the ego, we are wide-awake.

Did you notice in the picture, "Frankenstein" that they brought in something about unknown light rays. I tell you, we'll have all of our science pictures yet.

Naturally this letter is more or less personal. But you may print any or all parts of it.

G. M. Pendy,
Davis, Cal.

(We wonder how Mr. Schwartz can deny the assertion of Mr. Pendy, that "your magazine lends inspiration to a fellow." And surely Mr. Schwartz will not say that a man who can write a letter such as that of Mr. Pendy is "wide-mouthed, not wide-awake." The above letter is short, concise, intelligent, and imaginative. What more can we ask?—*Editor*)

ON LETTERS

BECAUSE of the large number of letters we receive, we find it physically impossible to print them all in full. May we request our correspondents, therefore, to make their letters as brief and to the point as they can; as this will aid in their selection for publication? Whenever possible, we will print the letter in full, but in some cases, when lack of space prohibits publishing the complete letter, we will give a resume of it in a single paragraph.

A Better Man Than I

Editor, WONDER STORIES:

It has been many months since I addressed the Reader's columns, letting those prolific gentlemen, Messrs. Ackerman and Darrow, handle the lineage for me. They say that critics are those who have failed in art—so much for the brickbat experts.

Considering myself one of Mr. Gernsback's oldest supporters in the field of science fiction from the days of the old *Electrical Experimenter*, I am going to answer the letter of the gentleman from New York—Mr. Abbey Schwartz—that graced the columns in the February WONDER STORIES.

Mr. Schwartz' criticism of the readers of our magazine is at once a reflection upon his own character, for how anyone can possibly judge two or three hundred thousand individuals by one's own reactions is beyond me. My answer to this man's declaration is as follows:

Some time ago, Mr. Gernsback awarded me first prize in a contest concerning "What I have done to spread science fiction." I won by virtue of my part in founding the Science Corresponding Club. This club, started in March 1927, enrolled members from all over the world—all readers of science fiction magazines. In the past four years I have met many of the members of this club, all enthusiastic followers of science fiction, and found them to be extremely intelligent examples of American youth and adult citizenry.

It is very easy to assimilate a western story, or a love story, but, to one who is not interested in science, or the future of the race, science fiction has no appeal. And I will say that if Mr. Schwartz can show me educational values, in any other magazine, blended with the excellence shown in WONDER STORIES current stories of future science, he is a better man than I am (and I am a very egotistical person!)

(*Continued on page* 1289)

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We herewith present to the readers of this magazine, the most complete collection of practical and scientific books. We have, after an exhaustive study, selected these volumes because they represent the best books of their kind in print today. There is such a great variety that we are sure you will find many to answer your requirements.

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SCIENCE QUESTIONS AND ANSWERS

(*Continued from page* 1287)

Now suppose Lumen were to approach the earth at the speed of light. He would see time pass twice as quickly as if he were stationery. In other words if he were 100 light years away from the earth in 1932 he would see what was taking place here in 1832. If he travelled toward the earth at the speed of light, at the end of 1 year he would see what was taking place here in 1834 (instead of 1833). Two years on the earth has passed for one for him. If he now went away from his star at the speed of light, events projected from the earth would appear to move backward. This all indicates that time is simply a conception of events; distort those events and time, as a fourth dimension, is distorted.—*Editor*)

WHAT IS YOUR SCIENCE KNOWLEDGE?

TEST YOURSELF BY THIS QUESTIONNAIRE

1. What would be the effect on our sun of another star passing close by? (Page 1208)
2. What method has been proposed for gathering the sun's heat for power on earth? (Page 1214)
3. What protects human life on earth from destruction by disease? (Page 1238)
4. What are colloids? What is their function? (Page 1235)
5. What are the possible effects of two energy waves of the same frequency on each other? (Page 1235)
6. What are the determinants of heredity? (Page 1240)
7. What in our bodies has determined our progress? (Page 1240)
8. What is one of the chief features of the climate of equatorial lands? (Page 1259)
9. What strange power has the Honduras head-hunters? (Page 1262)
10. What is *epinephrin*? (Page 1263)

THE READER SPEAKS

(*Continued from page* 1288)

In the search for what constitutes value in a story, may I submit the opinion of a writer? The only three things I ask in any story are:

1. Realistic characters—characters who will remind you of Bill Jones, who owns the store down the street. Characters that are not paragons of virtue, intelligence, and concentration.
2. "What's going to happen next?" "Gee whiz, Ma, can't yuh wait a minute, I gotta find out what the end is!" English Deans call it "maintenance of suspense."
3. A substantial plot.

One more thing! Thank you. Now, about this best author question. Most of the younger readers, I notice, prefer Clark Ashton Smith, Williamson, Repp, Keller, and others of the modern science fiction school. But my choice will always be—Abraham Merritt and A. Hyatt Verrill.

Let's have some of those movie petitions, Mr. Editor, I'll pet some names even though I have to get Black Lem Gulliver to help me!

But, if you will excuse me, I will go eat an orange to remove the flavor of Mr. Schwartz's letter. Best wishes for 1932 from Wreyburn, Alice, Rathmon, Lem, and:

Dennis McDermott,
Chicago, Illinois.

(*Continued on page* 1291)

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Education of the family
Sex health and prevention

Girls— Don't Marry

before you know all this—

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How to be a vamp
How to manage the honeymoon
What liberties to allow a lover
Secrets of the wedding night
Beauty diets and baths
Do you know—
How to attract desirable men
How to manage men
How to know if he loves you
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It's up to you, science fiction lovers!

Motion picture compaies are asking this question, too But despite the success of science fiction in this country, and the rapidly growing reading public, the number of science fiction movies that have appeared in America have been pitifully few.

"Metropolis" and "By Rocket To The Moon" were German films; only "Just Imagine" which was after all a humorous rather than a realistic film, "The Mysterious Island" and one or two others have been filmed in America.

Now comes the Universal films "Frankenstein," which is a huge success and "the Invisible Man" of H. G. Wells: and R-K-O has a film resembling the "Mysterious Island " But these few films are mere crumbs thrown to the hungry lover of science fiction. And even the millions who do not read science fiction, who are lovers of adventure, and exploration in new places and times, are becoming tired of the monotony of sex, gangster and war pictures.

Do You Want Science Fiction Movies?

If you do, you have but to make yourself heard. Many of our readers are writing to film companies to make their desires known. BUT THAT IS NOT ENOUGH! Film companies are guided by the wishes of thousands and tens of thousands, not by a few letters here and there.

Wonder Stories and Wonder Stories Quarterly Will Make Your Demand Count

We are organizing a gigantic petition signed by all those who want science fiction movies and will present this petition to the large motion picture companies IT IS UP TO YOU as lovers of science fiction to make this a success.

One petition blank from each reader of Wonder Stories will be sufficient to make a powerful appeal to any movie magnate.

Get Five Signatures to This Petition

and return them to us at once. We will gather them together and show the motion picture companies the enormous demand for science fiction movies.

Sign this petition yourself, get four other signatures of your friends and relatives and return them to us. We will do the rest!

If you wish additional petition blanks write to us for them immediately.

EDITOR, WONDER STORIES
98 Park Place,
New York.

We, the undersigned, herewith add our voices to the great demand of lovers of science fiction, for the production of a reasonable number of Science Fiction Movies in America If such pictures are produced, we will support them loyally and urge our friends to do likewise

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THE READER SPEAKS

(Continued from page 1289)

(Since we have stated our point of view on Mr. Schwartz' letter, we leave the rest to our readers. Mr. McDermott, co-author with P. Schuyler Miller, in the "Gulliver" series leaves no doubt as to where he stands.—*Editor*)

Improbable But Hardly Impossible

Editor, WONDER STORIES

Here's a reply to the letter of Mr. Abbey A. Schwartz, printed in the February issue of WONDER STORIES.

I believe most of the "adolescents" will agree with me when I say that Mr. Schwartz is mistaken when he says that WONDER STORIES are trash. To begin with Mr Schwartz is a writer. He undoubtedly does not write science fiction and therefore his opinion is more one-sided than the other "adolescents." Again as a writer, he probably knows little and cares less for science than some of the other readers.

I am but 16 years old but have had the opportunity of seeing others who read WONDER STORIES. They are all wide-awake and not wide-mouthed, as Mr. Schwartz says. In High School for instance, those who laugh when you mention WONDER STORIES, are nine cases out of ten, not interested in science—like the girl in front of them who "doesn't like to read; out for a good time." These people are just like the "guys" who said to Columbus, "It's a lot of foolishness." They say this because they don't understand it themselves.

What about a teacher's opinion of the subject? Here's an English teacher's opinion. "Interesting, good for the imagination, a different type of literature, and educating." Your stories should be recommended to some students because of their lack of imagination. It gives something to think about.

I handed in a book report of one of the stories in your QUARTERLY. From what other magazine would a teacher accept a story, for a book report?

I have a friend who is an electrical engineer who gets his copy of WONDER STORIES every month and not forgetting the QUARTERLY. Another friend majoring in chemistry at college reads WONDER STORIES. Still another is a radiotrician. I could name many others who read WONDER STORIES and none of them are "adolescents."

Now as to the impossibilities of some of the stories. Yes you'll find exceptions to all rules. Some stories are highly improbable, but is anything impossible? Smarter men than we have asked that question; and it is right for Mr Schwartz to answer a question that has been disputed by the most educated men of the times.

Mr Schwartz' brickbat is not a bad idea. Why not take a survey and prove to him that the magazine does cater to the quality public?

Personally I think Mr. Schwartz is simply peeved in some way at the publisher. If not I'll apologize; but what can a fond reader think when he hears some one run a good magazine down.

I think you did right Mr. Editor, when you called his bluff and printed his letter. I'd like to see other readers stick up for our magazine.

In closing I'd like to hear from other readers who agree or disagree with my viewpoints.

Stick to your guns, Mr. Editor, and don't worry about "guys" like Schwartz

F. Warren Gents,
Oklahoma City, Oklahoma

(As we stated originally in answer to Mr. Schwartz, it may be a long time before many of the prophecies of our authors come to pass. But that is not the fault of the author but of our scientists and engineers. Science has not yet caught up with science fiction.—*Editor*)

The Fire of Life

Editor, WONDER STORIES

"Life without protoplasm is impossible,' concludes Herr Ley in his letter which appeared in the January issue. He has just finished proving that a silicon organic world with silicon substituted for the related element carbon would be chemically impossible. The case against silicon is conclusive, that possibility must be discarded,

(Continued on page 1292)

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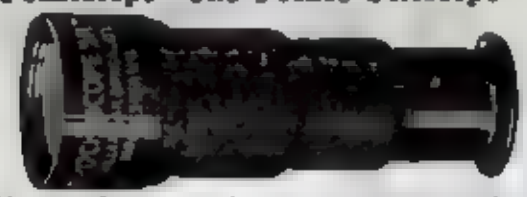

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THE READER SPEAKS

(Continued from page 1291)

but the argument neglects a hundred other possibilities.

To discuss the question it is essential to first define "life" and to reach a definition uncolored by anthropomorphic habits of thinking. An organized something, capable of assimilation, adaption, and reproduction—that is the sum and substance of most biological definition that by its very nature can not be exact.

Now I believe I can give an example of a very common phenomenon that obeys the foregoing definition and therefore might be considered living. Yet it is non-protoplasmic; indeed it is gaseous in nature, a structure possessing definite zones of gases of different function and composition. I refer to fire. A flame is not homogeneous throughout. Those who have studied flame structure will know that there are zones of different temperature, reducing sections and zones where vigorous oxidation is taking place.

Fire has indeed been connected with life by thought and figure of speech since time immemorial. We say a flame "consumes," "devours," "eats." It engulfs its food as an amoeba might, sending licking streams of flame around it and "digests" it, liberating the stored chemical energy as heat. A flame like any known organism absorbs oxygen and uses it to oxidize its food or fuel. The gases that compose the flame are derived from the fuel on which the flame has fed. The fuel has therefore been assimilated and used to make more flame just as the food the single-celled amoeba has ingested may be used to make more amoeba.

Reproduction. When conditions are right and there is plenty of fuel on which to feed, the flame waxes hot and crackles. If wood, for example, is burning, sparks are flung into the air, and like seeds that land in fertile soil, may start new fires like the parent fire. A fire, like an organism, must keep its processes going or perish, although under protected conditions, it may remain almost quiescent or smolder as can many living things.

Adaptation. A fire started with kerosene to which timber is added will modify its original structure so as to burn the wood efficiently.

The remarkable versatility of that complex system of protein, carbohydrate, fat, water and mineral salts, that is called protoplasm, is unmatched by anything that we now know of. But the entire temperature range within which it can exist is only about a hundred centigrade degrees while temperatures of millions of degrees are known. At lower temperatures, ammonia systems of life in which liquid ammonia replaces water as the liquid medium may be possible. Liquid ammonia has many interesting properties that might be involved. At higher temperatures, gaseous systems may have plausibility as in the case of fire as described above.

It might not be a bad idea to apply the term "life" to any dynamic system. In figurative language we frequently do. "The angry sea hurled *its* breakers against the rocky shore." In any case the boundary is indefinite even with the help of arbitrary distinctions. Those who have fought spreading forest fires, for instance, may tell you that the fire sometimes seems to have diabolic cunning. An illusion, of course, but illustrative of the resemblances of all dynamic systems, "living" or otherwise.

To conclude: There is nothing in life itself which proves that it must be protoplasmic in nature. In this world under our prevailing conditions of temperature, atmospheric conditions and chemical constitution, protoplasm has shown itself to be the most efficient life material. But there are an infinity of other conditions throughout the endless chain of universes and well may there be many "dim and unknown modes of being"

Sidney D. Berlow,
Ithaca, New York.

(In the last issue we published P. Schuyler Miller's answer to Herr Willy Ley's letter, that life without protoplasm is impossible. Now we give Mr. Sidney Berlow, author of "The Crystal Empire" a chance to answer Herr Ley. Mr. Berlow is another chemist who believes that life without protoplasm may be found in the universe.

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THE READER SPEAKS

Mr. Barlow's comparison of a fire with life is very suggestive and stimulating, and we believe that many other illustrations of the qualities displayed by apparently non-living things could be found.—*Editor*)

An Example of Nobility

Editor, WONDER STORIES

Edmond Hamilton's "Conquest of Two Worlds" was a knockout; and with this letter I am writing my approval of the actions of Mart Halkett in fighting with the Jovians against his own earth people.

I assuredly would not aid in the selfish exploitation of other planets, if to conquer those worlds meant the massacre of a harmless population. When the American pioneers pushed westward they found their advance barred by a race of savage red men, who were instinctively fighting to protect their homes and country.

However, in this situation, the aborigines had in the most cases an equal chance with the whites, for the manner in which they fought was one of stealth and cunning. This offsets the fact that the white men were better armed.

But in the cases of the invasions of the planets Mars and Jupiter, by the earth soldier, we have a different situation. The warriors of earth were better armed and completely prepared for the exploitation of the planets. Earth had tremendous powers of scientific warfare at her command. The people of Earth took advantage of the innocent friendliness of the Martians and Jovians.

We cannot blame the Martians and Jovians for fighting for their homes. What if puny men were attacked by an invading race, of a highly advanced civilization! What would we do! Of course we would fight if we were treated in the same manner as the Martians and Jovians were treated by us.

There are those who may argue the "survival of the fittest" as the highest law! But man's love of conquest and domination has caused the downfall of more than one nation. But even though one may say that expansion of the human race is inevitable and the "survival" law is the highest law, I will still defend Mart Halkett.

Halkett died fighting for an ideal. He hated oppression and greed. He could not stand to see innocents being slaughtered because of the money- and power-mad men of earth. So even at the expense of his own life he tried to right the wrong that had been done. He failed, but why did he fail? He was foolish, by the standards of those minds lost among the shadows of lust for power and greed. But to those minds that are idealistic in attitude, who do not place mere things of earth above spiritual values, he was a noble and inspiring figure.

There have been many men like Mart Halkett. There were the men of science during the middle ages who held out against scorn and punishment by the Church; and in our own day Woodrow Wilson dreaming of a peaceful world of united nations.

Mark Halkett was true to his ideals. Although his efforts may seem futile to most minds, to me he is an example of inherent nobility in the human mind.

T. M. King,
Shenandoah, Iowa.

Mr. King's enthusiastic defense of Mart Halkett should stimulate other of our readers to write pro and con on his treason to the earth.—*Editor*)

Appeals to Barbarous Imbeciles

Editor, WONDER STORIES

I have noticed for quite some time a steady decline in the scientific value of the stories in our magazine.

This is not a letter of criticism, for I have gained much of worthwhile knowledge in the past from most of the stories, and it is with much regret that I notice the number of war stories of late. There are lots of magazines on the market that put out such barbarous materials that have no appeal for me.

I have tried to keep still for some time in the hope that you would return to science fiction

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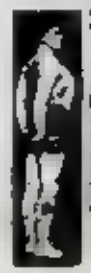

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THE READER SPEAKS

(Continued from page 1293)

and civilized scientists. Instead it seems to me to be getting worse.

I know that such stories should appeal to certain types of bloodthirsty and barbarous imbeciles; but to a person of intelligence they are nauseating.

In this last issue you have three stories that are absolute trash, as far as I am concerned.

"The Final War."
"Red April, 1965."
"Mutiny on Mercury."

"Waves of Compulsion" is passable, although it has as its theme "oppression." Though why a race that was so highly developed scientifically should be bested by three puny men and one woman is a mystery to me.

"The Eternal World" was very good, in fact it was quite a masterpiece. The final installment of "The Time Stream" brings to a conclusion a story that I'm afraid will not appeal to the average chap. The ideas involved are not at all apparent, thus making necessary the use of one's reason to properly understand them. I enjoyed this story very much.

John Taine is a very intelligent man and his stories have always been good. But he has so far outstripped himself in "The Time Stream."

I hope that I can induce you to change your policy with regard to war stories. I know that they bring more readers of the ignorant type but there is always the danger of a falling off among those whose sole idea in reading science fiction is one of instruction and entertainment.

Djana Smirni,
Philadelphia, Pa.

(We do not favor war stories because they may be bloodthirsty thrillers. But we do favor them when a picturization of the bloodiness and brutality of warfare brings home to a generation who did not fight the last war, what a terrible thing modern warfare is.

We are very surprised that Mr. Smirni thought that "The Final War" of all stories was "absolute trash." This story written simply, sincerely by a German artillery officer in the World War, has as its sole aim the illustrating of the utter folly of another great war. We urge Mr. Smirni to reserve his judgment until he has read the final installment in this issue; and if he does not agree that this story should be sent to every military commander in the world, as a word of warning, we will handsomely apologize.—*Editor*)

Just Imagine This Scene

Editor, WONDER STORIES

"The Time Stream" is absolutely *stupendous* in its scope! This man Taine is a genius.

But however wonderful a story may be, it is seldom perfect. I can find many flaws in "The Time Stream"—which, being purely imaginary, I suppose really shouldn't be taken too seriously. The story is not superbly written, but the theme! Now why did not the travelers in the Stream return to this "shadow world" with some of the marvelous science of those past epochs! Why, did *they* not rediscover the secret of the undying flame from what they had known and experienced, instead of one of a later time! Perhaps their memories of things in other times were erased by their passage through the "Stream"—although I don't think Mr. Taine explained this, but rather gave to understand that they *did* remember for some time.

Just imagine this scene—it is about the year 2000, and gathered around an electric heater (all right then, atomic), there are several old men, bent with age. They are discussing the science fiction of the long dead past . . . "I remember 'way back to the days of 'The Time Stream,'" says one. "Boy, *that* was a humdinger!" And the rest nod their patriarchal heads in solemn agreement.

Linus Hogenmiller,
Farmington, Missouri

(Now that the world is faced with the possibility of a new catastrophic war, the moral of John Taine's story regarding the "birth of the beast" acquires new meaning. We must live by the rule of reason or perish, he says. Probably the next twenty years will show what the answer will be.—*Editor*)

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BOOK REVIEWS

TOLD AT THE EXPLORERS CLUB, edited by Frederick A. Blossom. 425 pages, illustrated. Size 6¼ x 9¼. Published by Charles and Albert Boni, New York. Price $3.50.

This is a collection of true adventures of exploration by men who have really experienced them, as the jacket states, "there are no second hand accounts." Such men as Roy Chapman Andrews, Vilhjamur Stefansson, Charles Lindbergh, Sir Hubert Wilkins all contribute their tales of conflict with the elements, in this exciting symposium. Andrews recounts his amazing trip, "Through the Wilderness of Northern Korea;" Lindbergh has his "Leap in the Dark." Felix Riesenberg tells of the "Arctic Ghost"; Wilkins takes us to Northern Australia with the Aborigines; Stefansson relates many curious and little known facts about the Polar Regions in "The Royal Road to Humdrum."

The proceeds of this book are to enrich the library of the Explorers Club; and it is for this unselfish purpose that the publishers have obtained so many first hand accounts of adventures from a distinguished group of contributors.

THE STARS IN THEIR COURSES by Sir James Jeans, 170 pages, illustrated, stiff cloth covers; size 5½ x 9. Published by The Macmillan Company, New York. Price $2.50.

Following the huge success of his two books, "The Universe Around Us," and "The Mysterious Universe," Jeans abandons his profound flights of fancy to return to the simpler problems of astronomy. This book is designed as an introduction to modern astronomy and the wonders of the universe as seen through great telescopes. Based upon a number of radio talks given in England, the book is non-technical, informal and conversational. The elements of the solar system, a description of the stars, their classification and variety; the great distant nebulae are all discussed leading to a survey of our present knowledge of the universe and its possible future.

Jeans asserts the view that the universe is a closed system, such as the surface of the earth, and he believes that astronomers are taking that position. Thus, he says, if we start from any part of the universe and travel on for long enough, the time at present undetermined, we should come back to our starting point. Jeans used the analogy of travel on the face of the earth to illustrate his concept of the universe. This theory comes not from astronomy itself, but from Einstein, who demonstrated as a corollary of his Relativity that space must be curved, and curve back upon itself.

VANDALS OF THE VOID, by J. M. Walsh, 288 pages, stiff cloth covers, size 5 x 7½. Published by John Hamilton, London. Price, 7 shillings, 6 pence (about $1.30 at present exchange rates).

Mr. Walsh's exciting adventure of the Interplanetary Guard, published complete in the Summer 1931 Wonder Stories Quarterly is now published in book form. The threat to the inner planets of the solar system, Mars, Venus and Earth, by the vandals from Mercury is described again here in complete form. The publication of this book in England is significant of two things: first that book publishers abroad are more wide-awake to science fiction than are their colleagues in America; and second, that there is a growing demand among book readers for good science fiction. It is hoped that the sales of this book will be the incentive for the publication of others.

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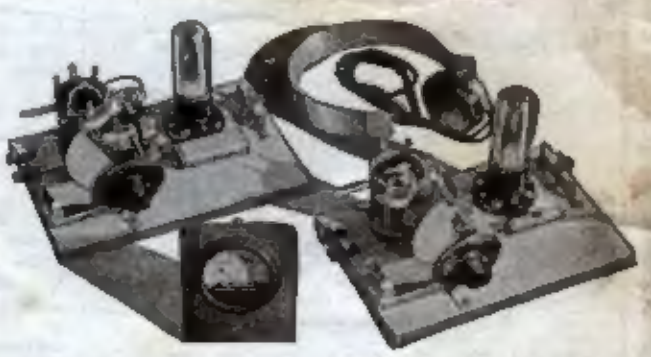

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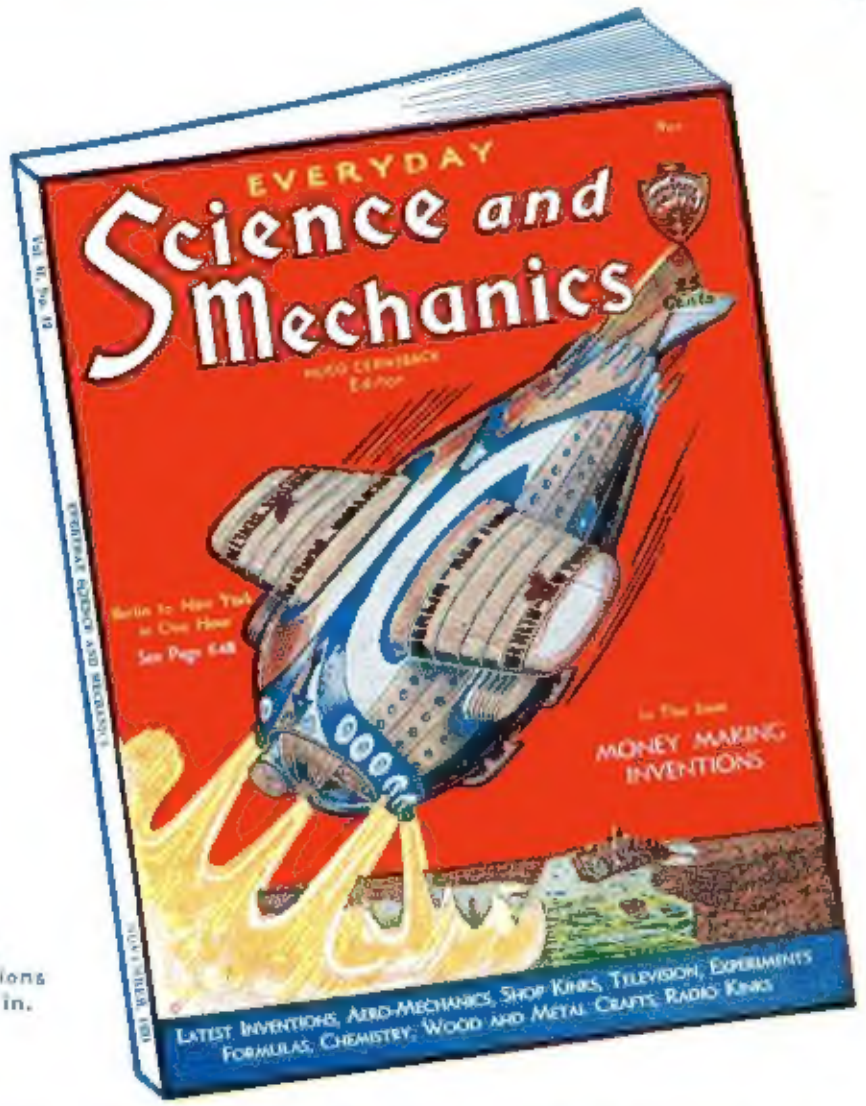
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